

SCHOLASTIC COACH

JANUARY, 1960

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ISSUE • 35c

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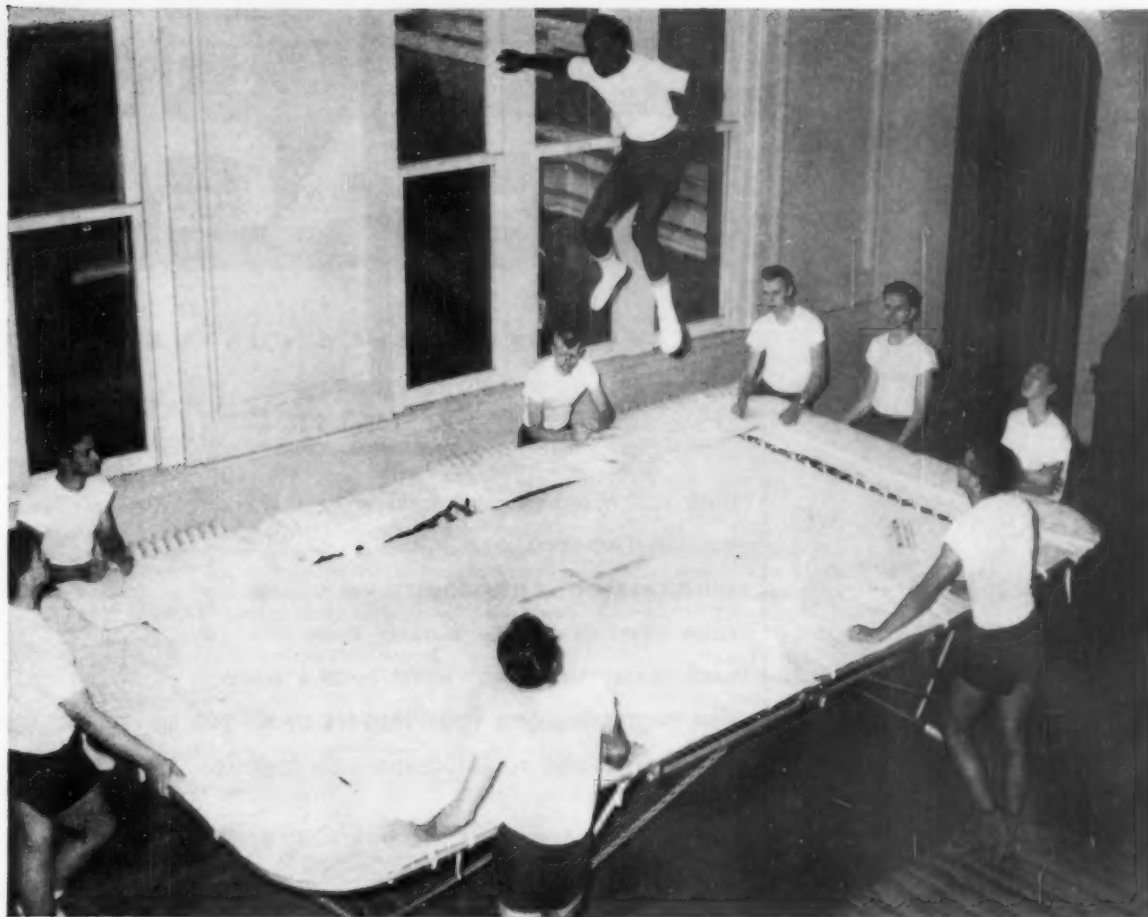
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*Reg. U.S. Pat. Off. for Nissen Rebound-Tumbling Equipment

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SCHOLASTIC COACH

Reg. U. S. Pat. Off.

VOLUME 29 • NUMBER 5 • JANUARY 1960

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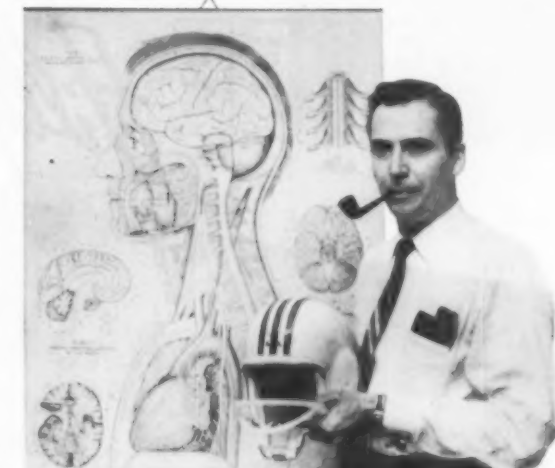
A Special Report to Athletic Directors, Coaches and Trainers...

"Here's why we believe
Cy-Co-LITE Helmets
are the safest helmets
ever developed."

Charles Hagemeyer

RAWLINGS DIRECTOR OF RESEARCH
AND ENGINEERING

First consider the plastic used in the Cy-Co-LITE shell. Over a period of two years we tested sixteen of the most suitable plastics in existence. From beginning to end, *one* plastic was outstanding. It did not become brittle at extremely cold temperatures. It did not distort at 165°. In our impact test (below) this plastic withstood *many times* more blows than any other plastic—plus several times more foot pounds impact than others. Yet it is 10% lighter! This is a rigid type plastic that does not dent easily. But it is flexible enough to distribute shock.



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HELMETS

WITH SNAP-IN, REPLACEABLE
PADDING BY



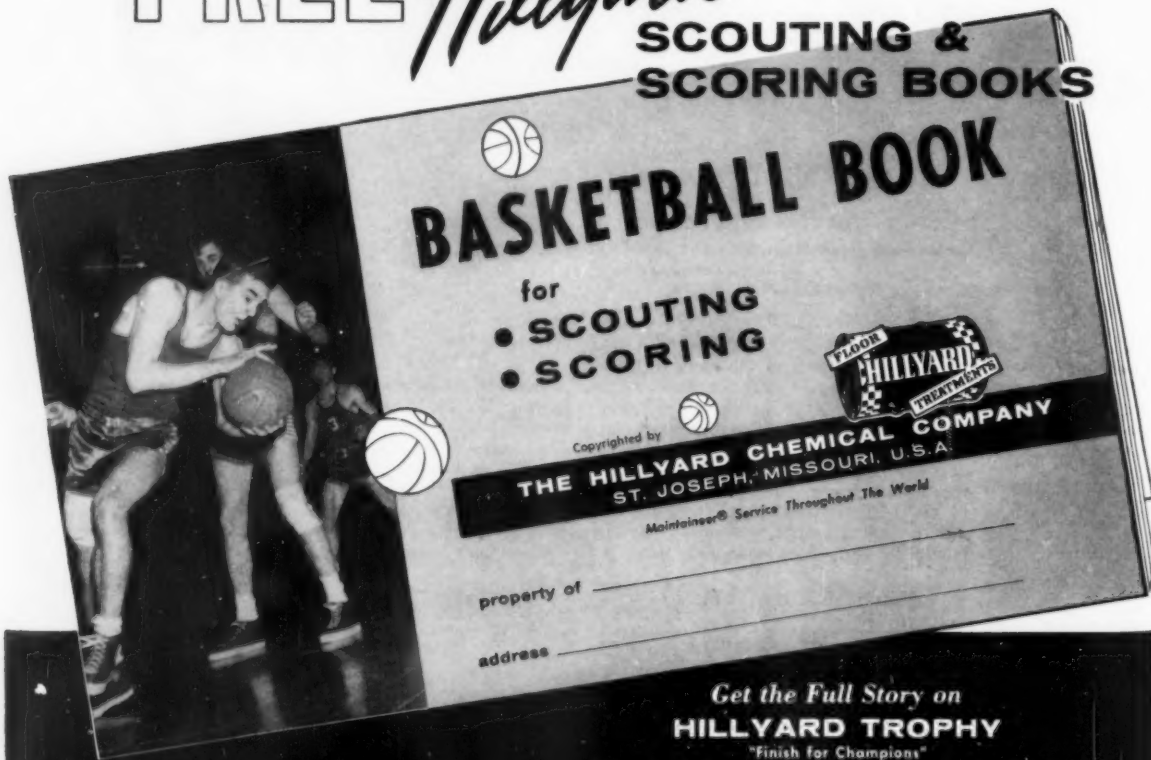
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International rocks 'n' rolls

WHO said our eggheads own a monopoly on one worldism and peaceful coexistence? What about our college track and swimming coaches? No one is working harder at fostering international understanding.

Look at all the foreign students they're bringing over to educate in the American way of life. So what if the kids just happen to be champion athletes? You don't think that has anything to do with it, do you? If the kids want to go out for the varsity, well, don't they need their recreation, too? All homework and no play may make dull boys of our foreign friends.

The beauty of this experiment in internationalism was perfectly exemplified in the 1959 NCAA cross-country championship. By a coincidence, *every one of the first five finishers was a foreign "student"*—Al Lawrence from Australia, John Macy from Poland, Fordy Kennedy from Scotland, William Reynolds from Canada, and Tom O'Riordan from, you guessed it, Ireland.

And remember "our" last national AAU swimming championships? Wasn't it educationally stimulating the way those two fine "American" collegians, Murray Rose and Jon Henricks, won the title for their alma mater? So what if they're Olympic champions from Australia?

The nice thing about such educational experiments in internationalism is that the idea is so catching. Inspired by the idealism of the track and swimming coaches, one of our basketball coaches last fall extended a welcoming hand—with a basketball scholarship stuck in it—to a 7-foot 1-inch Greek boy and a 6-foot 7-inch Swedish lad.

This fellow Rut Walter, North-western coach, must have some other country in mind, when he says: "It has gotten to be a joke the way some coaches are going out and recruiting overseas . . . It used to be that an occasional boy would come to this country on his own, or as an exchange student. That

was fine. But this hard-nose rushing deal is all wrong, and the majority of coaches in this country think so."

NEXT time one of the local type-writer jockeys tries to second-guess you, don't pop your cork. Count to ten and think of the poor basketball coaches in Turkey—the country, not the blue plate.

Know who does the basketball reporting in the land of fezes and olives? *The players themselves!*—reports our globe-trotting coaching buddy, Jim McGregor. And since there are over 15 papers in Istanbul alone, just about every player gets into the act, if not the game.

How'd you like to coach under that sort of set-up? You'd be sure-fire bait for the little man in the white coat.

Imagine taking out a kid who's just fouled up your offense and asking him, "Who told you to go into the corner when we got that ball out of bounds?"—and having him loftily reply, "I refuse to divulge my source of information." or "You can read about it in my column tomorrow."

Or, having a kid come up to you before a game and say, "Coach, would you mind taking me out in the fourth quarter? I have an 11 o'clock deadline to meet."

Or, having a kid indignantly remark, "Coach, that so-and-so out there is freezing me out. He wants to make his paper look good."

Some life for a coach, eh? Apparently the only way for a Turkish mentor to survive is to start the five boys who represent the largest papers.

THAT old bat magic of *Scholastic Coach* has everyone in its spell, from Harlem, Mont. to Haarlem, Holland—as witness this intercontinental line drive from Mynheer H. H. Kuol:

"You'll be a little surprised to receive a letter from Holland. But some weeks ago the Dutch baseball

world—which is a really small world—had the pleasure of entertaining an American baseball coach, Mr. Glenn Martin, who taught our pitchers, catchers, and coaches a lot during his month with us.

"Being a baseball coach myself, I was assigned to assist him; at some field practices, mostly as an interpreter. I had some talks with Mr. Martin and in one of them I asked him in which American baseball or sports review I could read and learn the most about baseball. Mr. Martin then gave me the name of *Scholastic Coach* . . ."

WHEN we heard the Russian basketball team was in town to play the Phillips Oilers, we leaped aboard our private sputnik and rocketed off to Madison Square Garden.

We had more than a perfunctory interest in the fellows in short red pants. The Russian coaches had written an article for us in our November issue, and we were eager to see their famous team in action.

Upon opening the game program, we were surprised and flattered to discover that the annotation in it on Russian basketball had been digested directly from the *Scholastic Coach* article!

Having been exposed to too much racehorse basketball in recent years, we expected a wild, free-scoring soiree. Imagine our pleasure when the game turned out to be one of the toughest defensive battles since Bunker Hill.

Both the Russians and Americans stalked each other like hungry tigers. Once the ball crossed mid-court, the defense moved in aggressively and tightly, refusing to give the offense the slightest *lebensraum*.

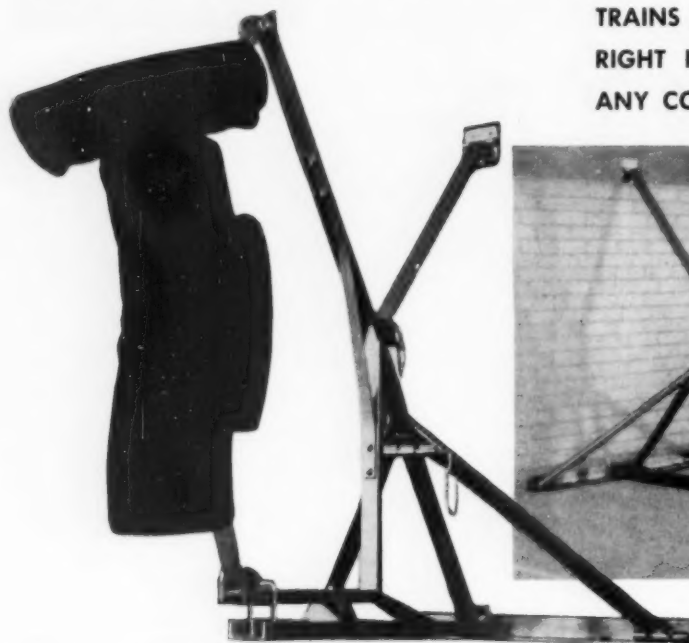
The Russians were big, tough, fast, superbly conditioned, and tremendously determined. Technically and tactically, they played "book" basketball: Look for the fast break;

(Continued on page 62)

It's here at last!

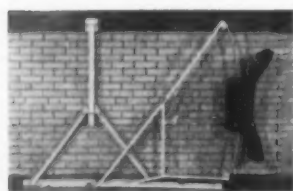
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TRAINS AND CONDITIONS FOOTBALL PLAYERS
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How would you like to have all your players ready for team drills on the first day of organized practice . . . *prepared to strike an explosive blow from a sound stance with perfect balance . . . to tackle with bone-rattling authority and form . . . and perform all the other fundamentals which ordinarily take many precious practice hours to perfect?*

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Folding and permanent bleachers in ultra modern Dudley Gymnasium afford seating for 3,000.

DUDLEY Gymnasium serves one of three senior high schools in Greensboro, N. C., a city with a population of 120,000. Organized on the 6-3-3 plan, the public school system has an enrollment of approximately 21,000. The present student body of Dudley High School numbers 934.

The new gymnasium alleviates crowded conditions in an area which was a part of the original building program at Dudley and which has served the physical education, intramural, and interscholastic athletic needs of both boys and girls since 1928.

Designed by Loewenstein-Atkinson, Architects, of Greensboro, the completion of the new gymnasium permits the use of the old gym for the physical education classes and intramural program for girls.

Because it's believed that physical education is a part of the total education program and as such should contribute to the general goal of education—the well-rounded development of all children as individuals and as responsible citizens in a democratic society—Dudley Gymnasium wasn't designed solely as an interscholastic contest arena.

One year of health and physical education is required for graduation in the Greensboro Public Schools, and elective courses in physical

MODERN TWO-LEVEL GYM PLANT



This beautiful two-level structure functions both as a community fieldhouse-meeting hall and high school gym.



Main locker room possesses 90 clothes lockers for use by each class.



Neat, compact, well-lit, excellently furnished coaches' office.

education are also available. In addition, intramural, recreational, and interscholastic athletic activities contribute to a balanced program.

A close examination of the architect's design indicates the extent to which Dudley Gymnasium is designed to meet such purposes. This is particularly evident in terms of separate dressing and storage facilities for physical education classes and varsity teams, classrooms for health education, and the arrangement of facilities so that unused parts of the building may be closed off during interscholastic contests.

The site required that the main entrance to the building be located with reference to an existing campus street, yet access from the locker rooms to the playing fields, 12 to 15 feet below street level, had to be provided.

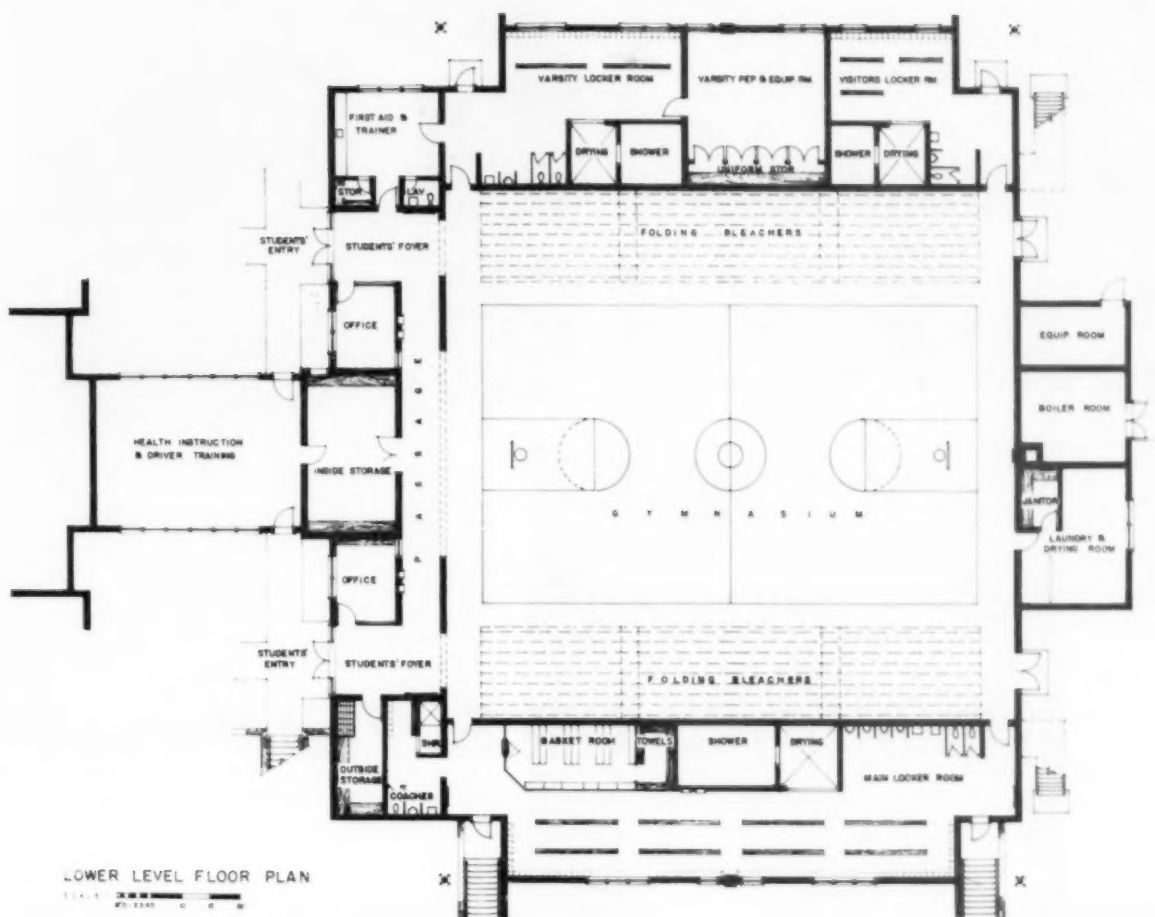
Since the building was designed to function as a fieldhouse and public meeting hall for the community as well as a high school gymnasium, a two-level structure was decided upon as best solving the site problem and at the same time providing a separate area for community activities that wouldn't interfere with the school facilities.

The main or public entrance, on the upper level, opens into a foyer extending the width of the building and opening at both ends into the bleachers. Utilizing the two banks

(Continued on page 75)



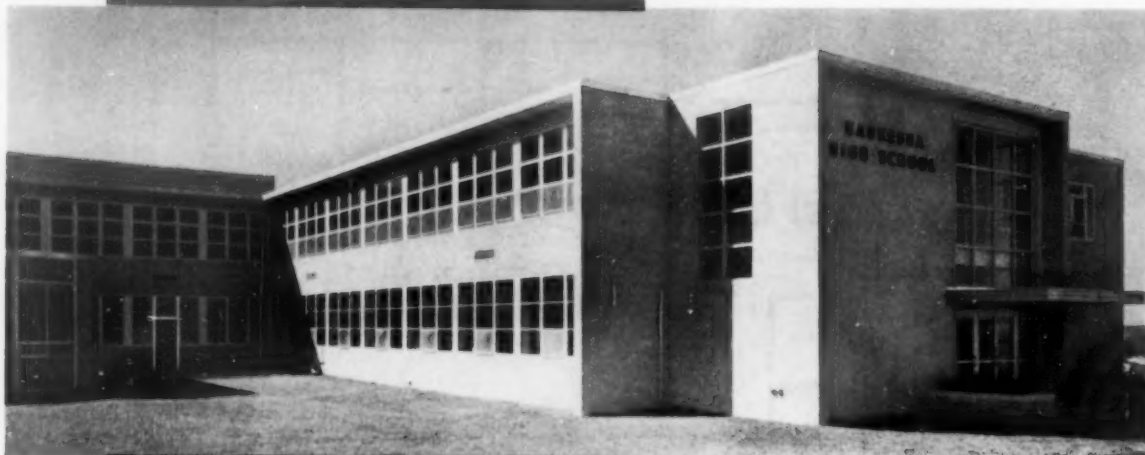
Handsome, modernly equipped health education and drivers training classroom.



First aid and trainers' room flanking varsity locker room.



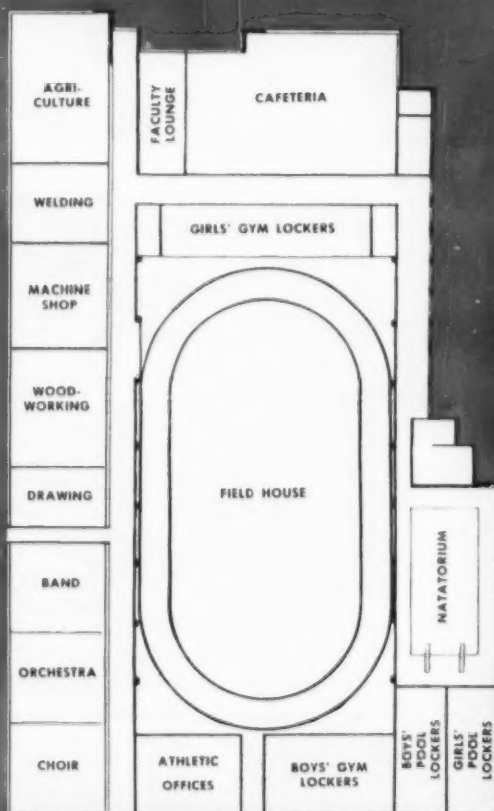
Storage room for equipment used out of doors.



By R. G. HEIN

Superintendent, Waukesha (Wis.) Public Schools

Multi-Sport H.S. Fieldhouse



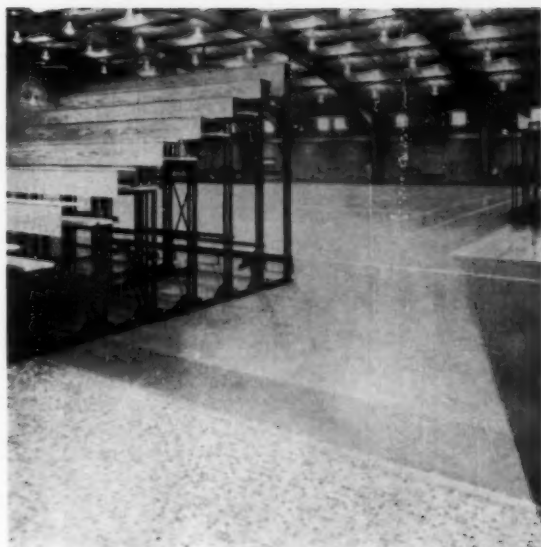
FOR years Waukesha had to cope with the problem confronting all rapidly growing areas—how to best provide facilities for rapidly increasing high school enrollments.

The existing high school was housed in three adjacent buildings built in 1920, 1927, and 1937. The physical education facilities consisted of a gymnasium 50' by 105', a gymnasium 45' by 80', and a swimming pool 30' by 75'. While good enough facilities, they simply weren't adequate for the enrollment of 2,700.

After discussing the matter of expansion for many years, the Board of Education finally decided that the only real solution lay in the construction of a new plant at a new site, and to run the existing plant and the new unit as one high school on two campuses—the old plant, to be known as the Central Campus, for grades 7 to 10 and the new plant, to be known as South Campus, for grades 11 and 12.

When planning began for the new South Campus, the physical education staff drew up its recommendations and discussed them at a series of meetings before submitting them

(Continued on page 68)



A view of one section of the retractable bleachers in position near the indoor swimming pool.



Over-all view showing running track around perimeter, courts in "in-field," and three opened 27' doors which connect pool to fieldhouse—permitting bleachers to be rolled into opening for swim meets.

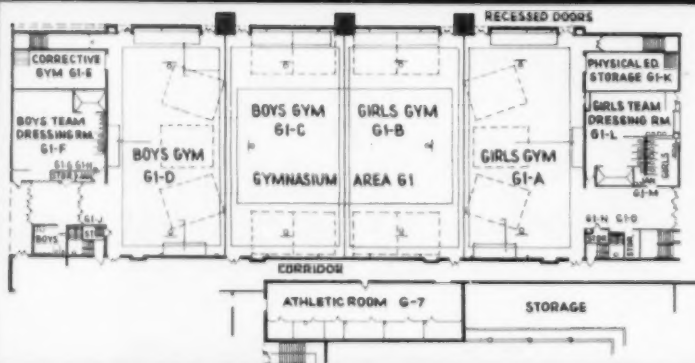


Capacity seating for basketball; note how the 15-row bleacher on far side extends up into a 12-row bleacher in balcony.

With roll-away bleachers on near side and along ends, fieldhouse can seat 3,500 maximum.



This master gym can be separated into four units by means of electrically controlled sound-proof doors.



FOUR GYMS IN ONE!

By **BRUCE M. FISHER**

Athletic Director, Penn Hills H. S., Pittsburgh, Pa.

PENN HILLS High School, planned to accommodate 2,500 students, is the proud pivotal feature of a 45-acre plant. Built on three levels to take advantage of the natural terrain, its special construction features allow for the addition of further academic and athletic units as they become necessary.

The school, including the planning stage, required six years to build. Actual work started in April 1956 and is only now nearing completion. The building was financed through the Penn Hills Township School Authority at a cost of \$4,-850,000.

The athletic plant includes three athletic fields—a football field with a quarter-mile six-lane track, a large baseball diamond, and a girls' hockey field, plus additional practice areas on a 1000 ft. x 600 ft. plot.

Future plans call for bleachers seating 10,000 and a field house for storage of equipment and dressing rooms. Additional areas contain a boys' and girls' play area, tennis courts, and outside basketball areas.

A wooded area with a stream running through it will be developed later. This will be equipped with outdoor fireplaces and electric lights for picnics, parties, summer camp, and other outdoor recreation activities.

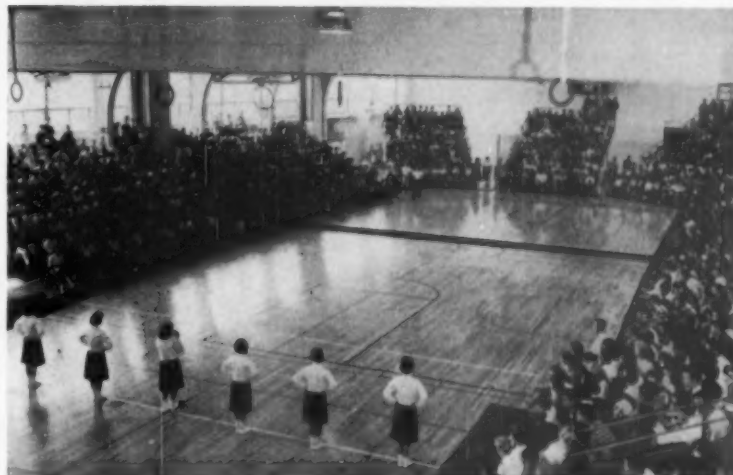
The physical education and athletic plant includes a well-planned master gymnasium which can be separated into four gyms by means of electrically controlled sound-proof doors. These doors are recessed so as not to interfere with the vision of the spectators, and the entire area is covered with maple flooring.

Each gym is 40 ft. x 70 ft.—with a total playing space 80 ft. x 190 ft. This arrangement makes possible a separate floor at each end, one for the boys and another for the girls intramurals. These gyms can be used while a varsity program is being conducted in the two center courts.

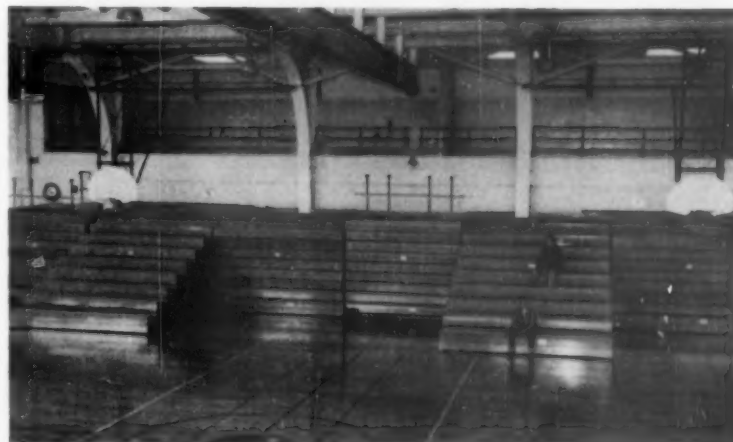
The two center courts make up a varsity court 86 ft. x 44 ft., with pull-up glass back boards enabling us to use the two end courts for spectator space when necessary. The bleachers which surround the court are of the pull-out type which permit anywhere from one row up to 13 to be used. When completely opened, the bleachers will accommodate 2,200 persons.



Overlooking main basketball floor, this area serves as a recreation gym, extra seating space, and as pressbox for newsmen and scoreboard men.



When glass banks are raised so as not to interfere with spectators' vision, the entire gym can be used for pep rallies and exhibitions.



View of bleachers on one side and remedial gymnasium on background balcony used by pupils unable to participate in strenuous activities.



Training room showing whirlpool bath, deep therapy lamp, hydrochlorator for moist heat, rub-down table, and a small ice making machine.



Each of 2,200 lockers in dressing room is tied into venting system so towels, shoes, and gym clothes are completely aired while in storage.



Cages for cleaned sports equipment and part of the team room area.

Throughout the gym area are properly spaced speakers for announcements and for broadcasting music for dancing and rhythm classes. Drinking fountains and expectorating bowls are recessed in the wall, one in each of the four gyms.

In addition to the four gyms, two other gyms are available. One is a corrective gym where students with physical defects can be given individual corrective exercises. It contains stallbars, a rowing machine, barbells, chest exercise pulleys, parallel bars, horse and buck, mirrors, and other posture corrective equipment. Incidentally, all gymnasium equipment is available for use in the remedial gyms.

Another gym overlooks the main basketball court and serves as a recreation gym, additional seating space for varsity games, and as a press-box for newsmen and scoreboard operators. Games can be broadcast by radio from this area through specially built-in cables.

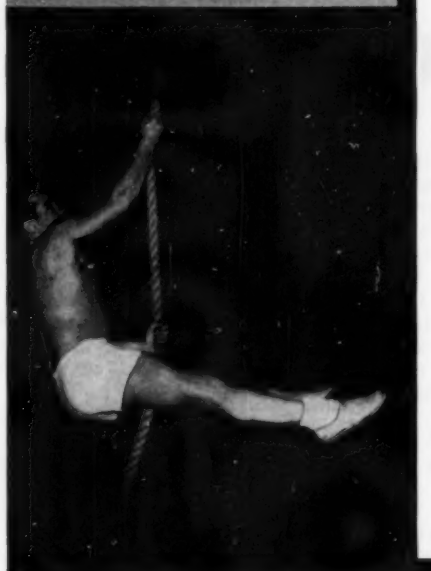
This gym is equipped with stallbars, shuffleboard courts, and ping-pong tables. In it we can conduct recreational activity or schedule students temporarily or permanently unable to participate in strenuous physical exercises.

Storage space for gymnasium equipment is available at the ends of the gym. A boys' dressing room is located off one end with a men's rest room adjoining. A girls' dressing room with an adjoining women's rest room is located at the other end of the gym. These dressing rooms contain lockers which are ventilated

(Continued on page 74)



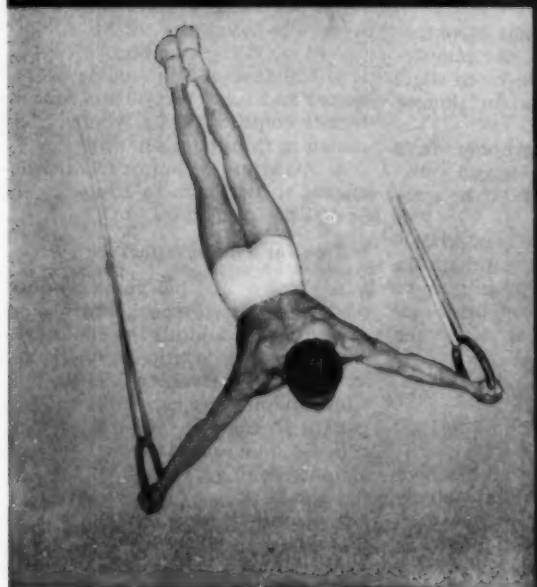
Lockers ventilated with forced heated air to completely dry contents.



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By **DICK WINIK**

Official Photographer, N. Y. Knickerbockers



Framing the play to get in as many players as possible.

Basketball

"Shooting" Hints

BASKETBALL is far simpler than football to photograph. It has half as many players. It's played on a much smaller area. The lighting conditions are constant. The ball is always out in the open and rarely obscured by tricky ball-handling (as it is in football). And there are no huge pile-ups, mass blocking entanglements, intricate play patterns, and myriad other complexities.

The football coach can only make an effort to analyze a game. He rarely knows exactly what happened until he views the game films. That's why movies have become such an integral part of his coaching.

In basketball the need for such films may not be as imperative. Whereas the football coach must depend entirely on the film for analytical purposes, the basketball coach—being able to follow the action much easier—doesn't have to rely so much upon it for post-game analysis.

Nevertheless, the game film is equally as valuable to him. It offers an invaluable check on the coach's on-the-spot analysis and speculations. It exposes every play in detail, pin-points each player's strengths and weaknesses, is unsurpassable as a scouting device, and provides an excellent promotional device for outside groups.

That's why basketball movies are growing in popularity. Practically every college is now shooting its games, while more and more high schools are gravitating toward this superb visual coaching aid.

With fewer players, a smaller area to cover, less complex action, and no lighting changes to worry about, the photographer's job is considerably facilitated. But this doesn't mean he can push the trigger on his camera and then go to sleep. It's actually harder to get consistently good results than it is in football. What accounts for this paradox?

First, the light conditions in most gyms are inadequate.

Second, many gyms haven't a good vantage point from which to shoot.

Third, because the photographer has to shoot with his lens practically wide open, the lens must be critically focused.

Fourth, since the action is continuous for the most part, the photographer must be a little more alert and must concentrate for longer periods of time.

Fifth, if the photographer isn't working with a motor-driven camera, it will seem as though he's always rewinding.

Since the great majority of schools can hardly afford the ultimate in equipment, it may be propitious to present two shooting set-ups—one for limited budgets and the other for ideal situations.

Minimum Set-up:

1. A 16-mm. camera holding 100 feet of film.
2. 500 feet of film for high school games, and 800 feet of film for college games. In most cases, you may use Eastman Tri-X or Du Pont 931 fast film. In some cases—as in new college field houses or in large

arenas such as Madison Square Garden—excellent results may be obtained with slower type film such as Eastman Plus-X or Du Pont 930.

3. A sturdy tripod.
4. A good light meter.
5. A one-inch lens usually suffices, though in some gyms the camera position is so close to the court that a wide-angle lens is necessary.

Ideal Situation (which we observe in filming college and pro games):

1. A motor-driven camera with a 200 or 400 feet film chamber, necessitating no rewinding and minimum stoppage for reloading.
2. A sturdy professional tripod to keep the camera level and assure smooth panning and tilting.
3. A good light meter.
4. 800 feet of film for schoolboy games and 1,200 feet of film for collegiate contests (same type as mentioned in minimum set-up).
5. A variety of lenses from wide-angled to two-inch to adjust to the prevailing conditions.

Tips for Photographers:

1. Arrive at the game site in plenty of time to check every piece of equipment and all the conditions.
 2. Choose a location as high and as close to the center line as possible. In most gyms, you'll have to get up on the top row of bleachers.
 3. Go down on the court and take a light reading.
 4. Make sure to pan smoothly.
 5. Frame the action to get the maximum number of men in the picture; that is, if the action is going
- (Continued on page 52)*



Laying of Teniko Royal Surfacing—also Sprinkler System and Fence Installation.



Stone Base Construction for 17 Teniflex Tennis Courts.



Section of Practice Wall and Practice Courts under construction.



Placing of Teniflex Surface-base—ready for Teniflex Surface and Rubberized Non-discoloring Green Composition Surfacing.

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Tennis Courts

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Heel Protection for Your Jumpers

By **BILL FALK**, Track Coach, Hope H. S., Providence, R. I.

AS I SAW the best broad jumper on my team limping toward me, I knew what was wrong before he said, "Coach, my heel hurts!"

This familiar exclamation is heard by track coaches all year long. Time after time, broad jumpers, high jumpers, and pole vaulters hurt their heels while *correctly* executing their event.

No matter what type of runway is used, the jumper stands a great chance of injuring his heel. Unfortunately, heel bruises are extremely painful and lasting, and may make the jumper ineffective for the entire season.

Reasons for heel injuries in jumping events. Properly executing a jump actually increases the possibility of getting a bruised heel. The reason for this is that the jumper drives his take-off heel down first on his last foot implant before jumping. The idea is to hit the heel, then roll onto the front of the foot for the best possible spring.

An inexperienced jumper, unknowingly, may save himself a heel injury by omitting the "heel slam." The novice usually implants the foot in front of its mid-point, thereby sacrificing maximum spring, but eluding heel injury. Once the newcomer is told about rolling from the

heel first, he exposes himself to injury.

Points of injury in the heel area. The greatest potential injury spot in the heel area is the tip of the calcaneus bone, located on the bottom and in back of the heel itself. The calcaneus' tip bears the brunt of an athlete's "heel slam," and a thin track shoe cannot sufficiently spread the hard blow in jumping. The tip is the most frequently injured part of the heel area, and it's only luck whenever this point escapes injury.

The lower region of the achilles tendon experiences a great strain, especially in broad jumping. Consequently, extreme tension and stiffness result, because the tendon attempts to help out the calcaneus' tip in taking a share of the impact of the "heel slam."

Similarly, the heel pads, which are directly on the bottom of the heel, will ordinarily suffer bruising from the jumping action. The strain will also cause tightness with resulting stiffness.

Possible methods for prevention and control of heel injuries. During the past eight years of track coaching, I've tried innumerable methods of eliminating heel injury in jumping. Although each method fell short of the mark, they did afford some

protection to my athletes.

Here are some of the remedies I've tried:

1. Taking pressure off the injured area of the heel. This may be accomplished by cutting a hole, like a doughnut, in felt, cotton, and rubber; then alternating the three substances in layers. The point of the bruise is left without any covering, but pressure is taken off the injury by the layers, which build up around the surrounding region.

When this dressing is taped on, some relief will occur. However, the jumper never gets sufficient relief, and he's still afraid to slam down his heel on the take-off.

This method will enable him to use the front part of his foot effectively, without hurting the heel. But "heel slam" is practically impossible because of pain.

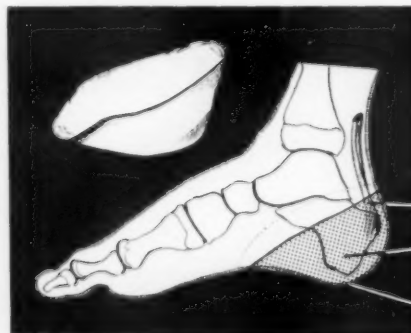
2. Use of rubber on injured area of heel. Rubber, either hard or foam, will give some protection, while still allowing the athlete to use his heel for a very limited amount of time in jumping.

However, the rubber will not cushion the heel blow enough to eliminate pain. Each jump weakens the rubber composition and flattens it. Also, the heel may withstand one or two hard jumps, but very few more.

3. Use of serving spoons for protection. By cutting out the center of the large ordinary kitchen spoon, I got a piece of stainless steel that corresponded fairly well to the average heel size. Then I took thin, hard rubber and vulcanized it inside the steel heel, thereby achieving a somewhat effective protector for the heel.

The bad points of this process were: first, the rubber compressed too quickly to afford lasting protection; secondly, the steel's edge was too sharp. The sharpness of the edge

Heel protector shapes to each heel comfortably and individually for maximum protection. Weighing less than a half ounce, it follows contour of injury-prone area and affords complete protection to calcaneus tip (most important), achilles tendon, and soft tissues (heel pad).



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(HEEL PAD)

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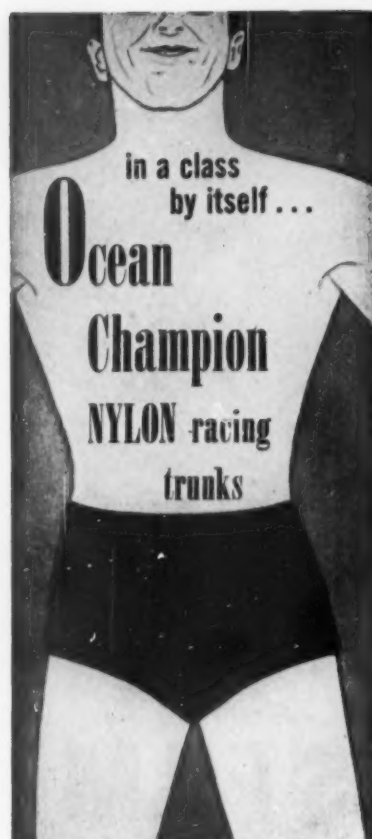
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of the cut spoon caused cuts and bruises on the bottom and side of the foot. Thirdly, the back and sides of the heel received no protection.

Several other methods have been tried by me and, I'm sure, numerous other coaches and trainers throughout the country. Until recently, no completely effective method for prevention of the severe heel injuries has ever been found.

For instance, methods using individualized casts of the athlete's heel are too expensive in regard to both cost of materials and length of time needed for a man to complete the item.

In other cases, the finished article has lacked suitable durability, lost its shape, or has been too injurious to the foot, ankle, and heel area, while giving protection to the heel in other ways.

New effective method for prevention and control of heel injuries. After five years of futile attempts to perfect a completely protective method for the heel, I enlisted the aid of Jack McKinnon, Brown University's highly respected trainer. We first examined all of the methods that we knew for protecting the heel area. Each method was evaluated in regard to both good and bad points.

After evaluating each method's effectiveness, we made a list of the requisites that an effective heel protector would have to have to do a complete job.

Qualities needed for the perfect heel protector:

1. **Durability.** No heel protector could possibly give optimum aid to the athlete unless it could stand up to repeated use during the entire season.

2. **Comfort.** While durability wouldn't present much of a problem, finding a substance which would provide comfort also was difficult. No matter how durable the protector might be, no athlete would wear it if his performance might be hindered.

3. **Light weight.** We also discovered that some protectors could be comfortable but still too heavy for a competitor to wear while running or jumping. Performances would be impaired greatly by the excess weight.

4. **Maximum protection.** Several materials gave excellent protection, but we needed one that would also provide the other needed qualities at the same time.

5. **Adjustable size.** This was by far our most serious problem. Despite having all of the aforementioned qualities, no heel protector would be effective unless it could fit every athlete's heel. Unless the

protector was able to mould to the individual's heel, it would be of little value. Only blind luck would allow an athlete to find his correct size, unless some material had a mouldable quality.

6. **Economy.** We realized that effectiveness of the heel protector must be coupled with low cost. Otherwise, school teams couldn't afford to supply protection to their athletes.

Jack and I discussed and tested numerous materials that might fulfill all of the qualities mentioned here, but we encountered some unsurmountable defect in all of the substances examined. Although we were sure of the form we needed, we couldn't find any perfect material for three years. We tried steel, iron, zinc, aluminum, and bronze unsuccessfully.

Solution of the perfect heel protector. During the winter of the 1958-59 track season, Jack and I finally found a material which possessed all of the qualities necessary for the perfect heel protector. Plastic was the answer to all our problems.

We consulted a plastics manufacturer, and he gave us several mixtures to try out. We made up many sample heels for my Hope High track team, and one made of Polyethylene proved to be perfect.

The name M-F Heel Protector was given to our product, and we applied for a U.S. Patent when we were sure that the heel would do a complete job. I've tested the M-F Heel for the past six months, and it possesses all of the needed qualities of the perfect protector.

Analysis of the M-F Heel Protector's qualities:

1. **Durability.** Despite use of the M-F Heel by over 20 athletes, the protector hasn't been weakened in any way. Our testing program exposed the M-F to more use than any one athlete could possibly give it in several seasons.

2. **Comfort.** Each of the athletes testing the heel reported that it's so comfortable that he hadn't realized he was wearing it after a few moments.

3. **Light weight.** The heel weighs less than one-half ounce.

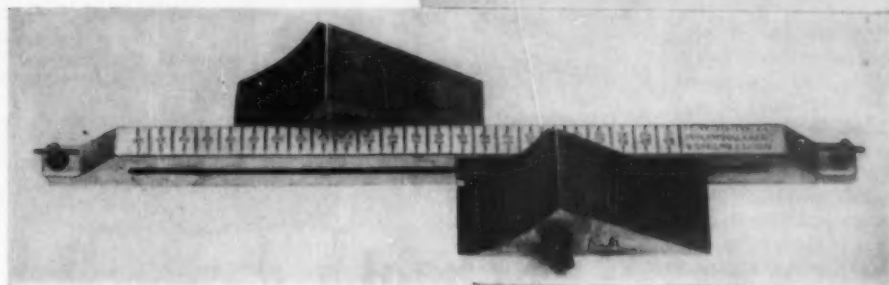
4. **Maximum protection.** In all of our tests, we've had no injuries at all. Also, athletes with previous injuries haven't had any recurrence.

5. **Adjustable size.** M-F Heel Protector fits anyone, regardless of the size of the individual's heel. We've used a group of boys from 220 pounds down to 100 pounds, and the heel fits each of them.

6. **Economy.** Our heel protector fits any team's pocketbook.

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FIG. 1, For Stumbling Runner: Toes and cleats of front foot are on ground.

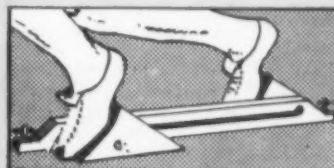


FIG. 2, For Bob-Up Runner: Toe barely touches ground; cleats on rubber pad.

RECORDS OFF ARNETT BLOCKS

Event	Time	Place	Date
100-Yd. Dash	9.3	Fresno, Calif.	5/15/48
100-Yd. Dash	9.3	Evansville, Ill.	5/14/55
100-Yd. Dash	9.3	Fresno, Calif.	5/13/56
100-Yd. Dash	9.3	Durham, N. C.	5/ 8/56
100-Yd. Dash	9.3	Texas Relays	4/ 6/57
100-Yd. Dash	9.4	Abilene, Tex.	4/27/57
220-Yd. Dash	20.0	Banger, Calif.	5/ 8/56
220-Yd. Dash	20.2	Los Angeles	5/ 7/56
440-Yd. Run	46.2	Salt Lake City	5/21/47
440-Yd. Run	46.0	Berkeley, Calif.	5/ 8/56
440-Yd. Run	45.8	Madison, Calif.	5/26/56
120-Yd. H.H.	15.5	Fresno, Calif.	5/15/50
220-Yd. L.H.	22.2	Durham, N. C.	5/ 9/56
220-Yd. L.H.	22.5	Salt Lake City	5/21/47
300-Meter H.	49.5	Los Angeles	6/29/56
110-Meter H.	15.4	Bakersfield, Calif.	6/22/56
550-Yd. Run	1:46.8	L. A. Relays	5/24/57
2-M Relay	7:32.7	L. A. Relays	5/24/57
950-Relay	1:23.7	Texas Relays	4/ 4/57
440-Relay	58.9	Kansas Relays	4/29/57
440-Relay	58.8	W. C. Relays	5/11/57
100-Meter Dash	15.3	U.S.A.-U.S.S.R.	7/19/58
200-Meter Dash	36.7	U.S.A.-U.S.S.R.	7/19/58
400-Meter H.	59.3	U.S.A.-U.S.S.R.	7/19/58

And Seven Olympic Records set at
Melbourne, Australia

Weight Training in a Junior High School

ALTHOUGH Eliot Junior High School had been using weight training for years in its special adapted physical education classes, it had never been included in the regular physical ed curriculum.

Impressed by its effectiveness in overcoming specific physical weaknesses, the administration decided to conduct a pilot project in the two physical ed classes being offered in summer school.

This was done with two purposes in mind: (1) to define some of the problems that might arise in incorporating a weight training program in our regular physical education classes, and (2) to record through various tests and measurements the actual physical improvement effected by the use of weights.

The groups embraced in this project included two classes of eighth and ninth grade boys. Period one consisted of 29 boys and period two of 21 boys, each period running for one hour and 55 minutes.

ORIENTATION

On the first day, the purpose of the course and a general outline of it was presented to the group. It was pointed out that the only requirements for a satisfactory grade would be to follow the safety rules and to perform all of

the exercises, with the assigned weights, in good form.

These standards were used because it was felt that if a student worked conscientiously and used good form with the assigned weights, improvement would result. It was also felt that no particular skills were involved—our only goal was an improvement in physical development.

A brief discussion on the physiology of muscle development was then given, and the importance of following the safety rules was emphasized.

After the orientation, the class was given three tests—pull-ups, push-ups, and a 50-yard dash. Care was taken to assure the observation of good

form, so that when the retesting was done the results would be more valid.

Girth measurements were taken for the neck, upper arm, forearm, chest, waist, thigh, and calf. These measurements were made with the muscles flexed, except in the case of the neck and waist measurements.

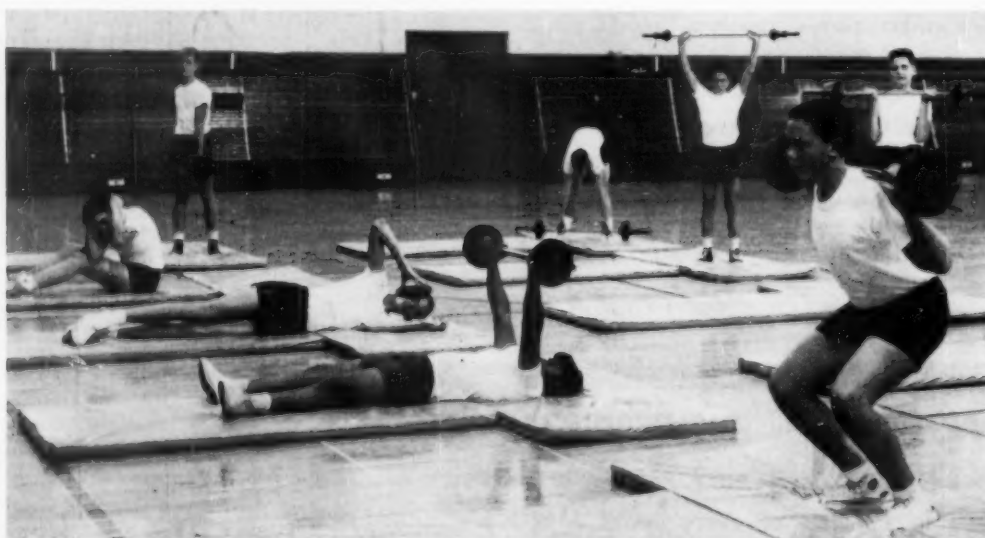
CLASS LAYOUT

The class was held in the gymnasium, with the weights being stored in a room adjacent to it. Two mats were used by each student, placed on the floor in the form of a T. This was done so that no weights would touch the floor and possibly damage its surface. One large mat would have worked equally as well.

The mats were set up in rows with approximately four feet between mats to insure against injury. Each student was assigned to a station, and was responsible for setting up this station with the required mats and weights. The first period class brought out the mats and weights, while the second period returned them to their storage places.

BEGINNING WEIGHTS

The amount of starting weight for each student was determined by the instructor. The technique used to determine starting weight was to seat the class before six barbells with assorted weights. The weights progressed



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EXERCISES IN WEIGHT-TRAINING PROGRAM

Lift	Weight	Repetitions	Sets
Military Press	Beginning Weight	8-12	3
Shoulder Shrug	Beginning Weight	8-12	3
Erect Rowing	Beginning Weight + 5 lbs.	8-12	3
Supine Press	Beginning Weight	8-12	3
Two-Arm Curl	1/2 Beginning Weight	8-12	3
Bent-Arm Pullover	1/3 Beginning Weight	8-12	3
Neck Curls	5-10 lbs.	10 R.-10 L.	3 ea.
Jefferson Lift	Beginning Weight	8-12	3
Dead Lift	Beginning Weight + 5 lbs.	8-12	3
Trunk Bend Extension	2/3 Beginning Weight	8-12	3
3/4 Squat	1/2 Beginning Weight	1 to 10	1
Toe Raises	2/3 Beginning Weight	10	3
Sit-Ups	2 1/2-10 lbs.	20-50	1

in poundage. The first bar had no weight at all except for the collars, while the others possessed total weights of 2 1/2 lbs., 5 lbs., 10 lbs., 20 lbs., and 40 lbs.

The correct way to lift a barbell was demonstrated to the group, then each student came up to have his starting weight assigned to him. The trainee was asked to perform the demonstrated military press for eight repetitions with the barbell assigned by the instructor.

Conservative estimates were made by the instructor as to which bar to start with. This was determined by the size and muscle tone of the individual. If the trainee had to lift more than one bar to determine his starting weight, sufficient time for rest was afforded between sets.

When the student pressed the barbell eight times in good form without straining, but with some effort, this was his beginning training weight. The student immediately recorded this weight for the military press on his weight training card. The increase in weights was recorded on this card each week.

The weights used for the remaining exercises are described in the accompanying table.

EXERCISE SCHEDULE

The results of the Roger's Strength Test and the Air Force Test showed that the boys at Eliot possessed above average strength in the muscles of the lower body and legs, while they didn't score as well in exercises involving the muscles of the upper body and arms.

For this reason our schedule of exercises included weight training for the upper body and arms three times a week on alternate days. The exercises for the lower body and legs were performed on the remaining two days. The purpose of alternating the days was to afford sufficient time for these muscle groups to rest and improve in size and strength.

TRAINING ROUTINES

Before each work-out, we had the class perform three stretching exercises and run a lap to raise the body

temperature and thus insure against muscle pulling. (Some instructors prefer to use the lifting of lighter weights as warm-up.)

The routines on Monday, Wednesday, and Friday for the upper body and arms included the following: military press, shoulder shrug, erect rowing, two-arm curl, bent-arm pullover, supine press, and neck curls.

The routines on Tuesday and Thursday for the lower body and legs included the following: trunk bend extension, 3/4 squats, dead lift, Jefferson lift, toe raises, and sit-ups.

For the routine involving the upper body and arms, each exercise was executed in three sets. The trainee increased the repetitions of each exercise two times each day until he reached 12 repetitions. Generally speaking, each student then added 2 1/2 lbs. for all the exercises and then returned to the original eight repetitions.

Some students, however, were unable to perform the exercises 12 times in good form, and therefore remained at the same weight. Others performed all sets and repetitions with comparative ease, and were able to increase the weights by 5 lbs.

Since the routine for the lower body and legs was performed only two days a week, three sets of nine repetitions were used the first day, and three sets of 12 repetitions on the second day. The weights employed in the squats were somewhat lighter, and the technique used in the exercise was a little different.

In the 3/4 squat, the trainee placed the weight behind the head and went down to the squat position for one repetition, and then placed the weight down on the floor. After counting slowly to ten, the trainee repeated the process, but this time for two repetitions. This same procedure was followed until 10 reps were completed.

For the sit-ups, a 2 1/2, 5, or 10-lb. weight was used, depending on the size and strength of the individual. Twenty repetitions were used to start with, and the repetitions were increased each day by 10 until 50 repetitions were completed in good form. The weights were then increased by 2 1/2 lbs. and the group returned to 20 repetitions.

(Continued on page 77)

AT TULANE



The floor in Tulane Gymnasium, where all varsity basketball games are played, is finished with safe, durable, non-slippery Seal-O-San.

**"Seal-O-San and good basketball
are teammates!"** says *Cliff Wells*



Cliff Wells, Head Basketball Coach
Tulane University
New Orleans, Louisiana

"There is no substitute for fundamental training in basketball, and *there is no substitute for Seal-O-San* in surfacing your basketball floor," says Cliff Wells. "Seal-O-San and good basketball floors are teammates. Speed and sure footing, which are so necessary in basketball, are insured by Seal-O-San. That's why I specify Seal-O-San *must be used on*

the Tulane Gymnasium floor, where all varsity basketball games are played."

Coaches like Cliff Wells insist on Seal-O-San. He has learned, through years of experience, that he can depend upon Seal-O-San with assurance that it produces the finest possible basketball playing surface. Test Seal-O-San in your school this year.

Get your copy of the new Coaches Digest. Free to coaches and athletic directors... please write on your school letterhead. Others send 50¢ handling fee.



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Six Sound Measuring Sticks for Equipment Buying

EQUIPMENT selection is a problem that plagues almost every beginning coach and often the seasoned veteran as well. The selection—or buying—of athletic equipment can probably best be described by the practical maxim: "Experience is the best teacher."

Every person will employ his own formula in selecting athletic equipment. Yet when you put them all together, the formulae are basically the same. Here are the six general categories that the buyer usually keeps in mind when he selects equipment.

1. Design and material.
2. Utility and cost of maintenance.
3. Safety factor in protective equipment.
4. Quality and workmanship.
5. Source of supply.
6. Price.

Efficient equipment selection rests upon the buyer's individual ability

and talent to correctly analyze these "six measuring sticks for sound buying." However, practically all coaches and school buyers admit they're not experts in all six categories. They must depend upon the salesman or the manufacturer, in many instances, to supply this information and satisfy themselves on product details.

The following selection tips should prove helpful, and also provide reasons why buyers refer to the six categories of selection in purchasing new equipment.

DESIGN AND MATERIAL

The design of equipment and the material used to produce the product go hand in hand. Design must be practical, while material must be thoroughly serviceable. You should be skeptical of a dressed-up item where basic design and playability may be sacrificed for eye appeal. Many times the extras and frills serve no functional purpose.

Most experienced coaches will agree that, without technical assistance and considerable experience, the material standard is the most difficult to analyze.

Each year many new fabrics and materials, made from new synthetics and plastics, are introduced. It's hard to keep up with all of them. While the coach may be satisfied with a material previously used, he cannot afford to disregard a new product since it's likely to represent an improvement over an older fabric or material.

It's suggested that the coach maintain records on service obtained from the various fabrics and new items he purchases. The coach who wants additional counsel on materials, other than that of the manufacturer, should consult the dealer or salesman for assistance.

Many of the basic materials used in the manufacture of athletic equipment are readily judged. However, it's the buyer's knowledge, based upon experience and in-use field testing, that assures an intelligent evaluation of the grade of product.

The coach should never be reluctant to test new products. All reputable equipment manufacturers have regular testing programs and thoroughly test new items before putting them on the market.

Many coaches prefer to buy or try a new item in a limited way,

possibly during spring practice or during the training period in the sport, to determine the new item's value before discarding proven equipment.

Buy and try new equipment first. If it meets your needs, okay. If it doesn't, don't be afraid to tell your results to the dealer or to anyone else.

UTILITY AND COST OF MAINTENANCE

All equipment is designed for a specific purpose, a specific need. Certain items must be purchased for the safe conduct of a sport, while other equipment might be termed "extras" or accessories. Make sure you don't sacrifice top-quality essential equipment for the frilly extras.

Equipment should be purchased on the basis of utility. It should meet specific game and safety needs, and should be of the quality and construction easy and uncostly to maintain. That is, the equipment should be practical and playable.

When considering the utility and cost of maintaining a new piece of equipment, be sure to check these things:

1. Are there frills on the equipment, making it difficult to maintain?
2. Will the equipment clean up easily and well?
3. Does the equipment have to be repaired and reconditioned after normal use?
4. Is the equipment too costly to maintain for effective use?

Consider all these factors carefully in any new equipment you consider buying.

SAFETY FACTOR

In most protective equipment a coach must buy, his *first* consideration must be safety for the wearer. He should always endeavor to obtain the maximum safety possible. With careful equipment selection and the assistance of the salesman, the coach can assure buying the safest equipment possible.

Every coach should set minimum safety standards for all of the equipment he buys. He should make certain that what he buys more than meets these requirements.

Everyone will agree that there's no substitute for quality in athletic equipment. The buyer should look for the consistency of quality in a

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other track shoes
out of the running



leads all other athletic
footwear in scholastic
and major league use.



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SPOT-BILT'S NEW TRACK SHOE FITS...AND FLEXES ...AND "FLOATS"...WITH NEVER-BEFORE COMFORT

- the new reshaped last, contoured to follow the natural curve of the foot at every point.
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- patented nylon inside reinforcement; lightweight foam sock lining; roll-over tongue with sponge lining.
- wide heel base support.



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because of its better
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line of products, regardless of whether they're made of leather, plastic, rubber, or fabric.

The buyer must rely heavily upon the knowledge and integrity of the dealer in determining quality. However, the coach must also know the relationship between price ranges and quality and how much he can pay for an item. The coach should first determine the quality he wants in an item, then attack the problem of what he should pay for it.

To most coaches and buyers, workmanship is the most important feature of any piece of equipment. Regardless of design and material, an athletic item lacks quality if it's

not expertly manufactured.

It's not uncommon for a buyer to purchase a single item from a quantity which he later intends to buy. He'll then compare the item with what he's presently using. Results obtained in this manner should supplement the experienced opinions of coaches, salesmen and manufacturers on any product you expect to buy and use.

SOURCE OF SUPPLY

Coaches expect equipment that measures up to the buying standards that have been previously dis-
(Continued on page 53)

DO'S AND DON'T'S OF EQUIPMENT SELECTION

DO'S

1. Standardize equipment requirements. More and more coaches are finding that standard sizing of equipment for an entire squad is more efficient than individual fitting because team members grow so rapidly in a short period of time that pre-season fitting to each player usually results in ordering under-size equipment. Standard sizes, recommended by the manufacturers, will meet 95% of your requirements.
2. Budget for some replacements each year even though you start with a new set of uniforms or equipment at the start of the season. Even the most expensive garments will be worn out by a few of your players during one season.
3. Buy the best protective equipment; even if it means fewer units.
4. Buy only from recognized sources of supply.
5. Order proper sizes carefully. The ordering of proper sizes is as important as the quantity of each size. Use the data available from your own records and recommendations from the manufacturers.
6. Scrutinize your inventory carefully. Order what you need for replacements and additional squad members.
7. Try to avoid too many special orders. Special orders are usually more expensive and cannot be exchanged.
8. Keep accurate records of your present equipment. Note sizes, catalogue numbers, brand names, year purchased, price, etc. Use these records to help you order new equipment.
9. Place your new equipment orders **EARLY!**

DON'T'S

1. Don't be careless about equipment selection. Careful equipment selection is as important as team conditioning. Your successful season actually starts with good equipment, of high quality, purchased well in advance of your first practice.
2. Don't attach numerals to jerseys in too large a size, since it is likely the elasticity in the garment will be eliminated. In most high school and college sports, the official rules specify maximum and minimum numeral sizes.
3. Don't buy on price alone; there is no substitute for quality.
4. Don't forget to order athletic equipment early.
5. Don't buy a new type of material or equipment without first checking its quality, ability to take game wear, and how well it will clean. Buy and test a sample first to make sure.
6. Don't buy poor materials. You risk your reputation and possible injury to the user by equipping your teams with inferior merchandise.
7. Don't try to get one more season out of worn-out protective equipment.
8. Don't take a boy's word for the correct size. Most boys seldom know their sizes. See that all equipment fits your team members. Have them try on equipment for proper fit.
9. Don't buy on impulse. Most coaches plan their game schedules one or two years in advance. Plan in advance on equipment, too!
And ORDER EARLY!

"The Coach Goes For Our New Showers, Too!"



Practice is over and the boys will be heading for home. Their coach steps, at last, into a relaxing, refreshing shower — his favorite ending for a busy school day. The new Hydroguard shower controls make this interlude safe, as well as enjoyable — for the coach and for his students.

Hydroguards protect bathers of any age against scalding and against sudden hot or cold bursts. Simple, single-dial controls deliver only the water temperature selected by the individual. Even if turned to full hot, water can't scald —

it is thermostatically held within safe temperature limits. And if the cold water supply should fail, the shower turns off instantly.

What's more, Hydroguards are as foolproof as they are safe and simple to operate. That's why so many safety-minded schools have installed Hydroguard Individual Thermostatic Shower Controls.

Get the facts. Request *Safer Showers* booklet and viewing of color slide film, *Safe Shower Systems*.



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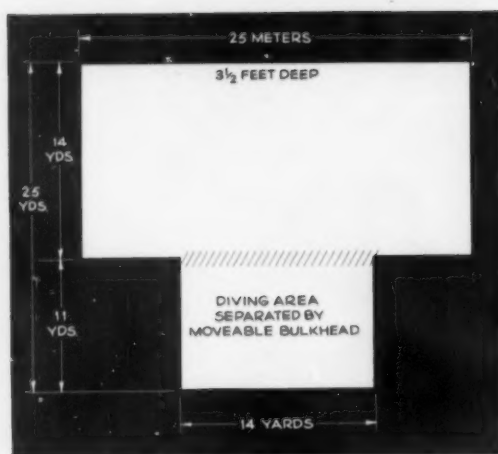
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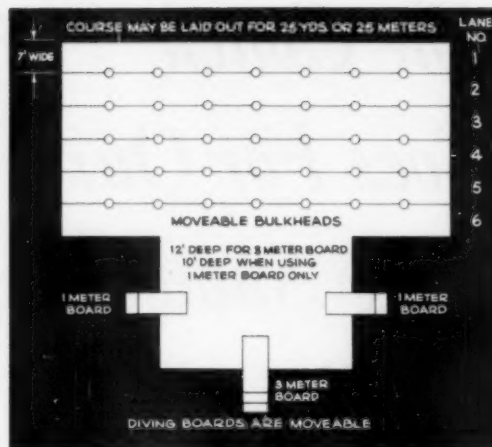
- ☐ Send illustrated booklet, "Safer Showers".
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Name _____ Title _____

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Ideal areas for recreation and instruction.



Set-up of 25-meter course with diving areas.

Dual-Purpose T-Shaped Pools

INASMUCH as the primary objective of the swimming program is to train students to be capable and confident in the water, we feel that there's no great need for the pool to be particularly deep.

Swimming pools are usually classified in two groups:

1. Those designed for mass recreation, social swimming, and diving.
2. Those intended for instruction and competitive swimming and diving.

It's our belief that these combinations can be worked into one pool, and we'll present a pool that meets all these qualifications. While by no means new, it's seldom seen in our state because of poor planning or finances, or even both. Too often the emphasis is on public relations rather than the value of instruction.

Some of our universities possess this type of pool on a larger scale and with different variations, while many recreation centers have adopted this type pool for outdoor use.

In the conventional type tank, we find most students using only one third of the pool. This mistake is repeated year after year in pool after pool.

In New York State, over 80% of the pools provide one third or less of tank area for the non-swimmers or beginners who need primary instructions. Why? Because of poor pool design and the lack of originality on the part of architects who like to build edifices rather than functional facilities for maximum usage.

Design: T-Shaped, with the bottom part of the "T" becoming the diving area. The diving area is so planned that it can be used for competitive meets. The top of the "T" can be laid out for a 25-meter course, while the bottom of the "T," running into the top, can be laid out to become a 25-yard course, or vice versa.

During swims and activities, a movable bulkhead can be placed across the front of the diving area to give you separate areas. With this division of your pool, you've created two teaching stations. One station is for beginners and swim-

mers, while the other can be used for your more advanced classes where diving can be taught.

The diving boards are so placed as to be movable, thus affording the use of this area as a life-saving class section or for recreational games for your advanced swimmers such as water polo, water basketball, etc.

Suggestions for Diving Area:

1. Diving boards should be 14 to 16 feet in length and project at least 5 feet or more over the edge of the pool.
2. Depth of diving tank must be 12 feet, if a 3-meter board is to be used. If only a 1-meter board, the depth must be at least 10 feet.
3. An adjustable fulcrum with the provision for locking in place.
4. The low board should be erected so that it can be rotated upward and backward so as not to obstruct the finish line for competitive races.
5. There should be at least 12 feet of unobstructed space above the diving board.

Depth of Tank: With a tank 3 1/2 feet deep, we've tripled our teaching area. We can teach all phases of swimming except diving in this area. We now have a pool which can be used for teaching, recreation, and competitive swimming. (The 1932 Olympic Games in Los Angeles were swum in a 3 1/2 foot tank.)

Length: The minimum length to meet interscholastic and intercollegiate regulations is 75 feet. The
(Concluded on page 36)

**By CHARLES SCHLEGEL
and GEORGE LANE**

Uniondale (N. Y.) High School

*Physical Fitness is FUN when
you bring outdoor games*

INDOORS

WITH SAFE-T-PLAY EQUIPMENT

VARIED ACTIVITIES, not monotony, are needed to develop and hold the interest and enthusiasm of students. Unless they enjoy their activities, youngsters can't fully reap the potential benefits of a physical education program.

DOZENS OF ENJOYABLE GAMES can be played indoors with Safe-T-Play equipment: new adaptations of softball, baseball, hockey, touch football and many other well liked games that avoid the lethargy of routine calisthenics.

THE SHORTER FLIGHT AND GREATER SAFETY of COSOM polyethylene equipment permit entire classes to take part in active indoor games. These items provide a happy answer to the indoor physical activity needs of hundreds of schools and institutions across America. And, they can for you, too! Find out for yourself. Investigate the Safe-T-Play line today.



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Polo-Hockey and many other exciting games are played with the Cosom Safe-T-Mallet.



Safe-T-Bat and Scoop are combined to bring outdoor games safely indoors for entire classes.



There is an endless variety of Scoop Ball games for every age from first grade through high school.

This helpful new book is FREE! Ask your school supply dealer or write Cosom for your copy.



Safe, puncture-proof Fun Football is ideal for touch and flag games, pass practice and play polishing.





Coach Shoults explaining to halfback Sam Johnson that each film section dealing with the play of each position will be edited into a single film to help develop better offensive and defensive techniques.

NORTHWESTERN'S Football Film Program

MOTION pictures have proved themselves as an exceedingly valuable coaching tool. What better means are there of showing the players their errors and of stimulating the players into correcting them? Studying their actions, especially in slow-motion, enables the players to analyze their faults, study poor timing and discover wherein they can improve their playing skills.

We at Northwestern, like virtually every college and a great many high schools, use 16-mm. motion pictures as the core of our squad training program. We maintain a comprehensive film library consisting of films we take of every game over the years.

Key to the success of this motion picture training program is (1) slow-motion presentation, (2) immediate repeat showing of a single play, and (3) the ability to study a single frame. These are easily

achieved with our silent 16-mm. projector.

Slow motion is first obtained by shooting the games at 32 frames per second and then projecting them at 16 frames per second. Time is magnified even more with the projector through the use of the rheostat speed control which enables us to project only 2 or 3 frames per second.

The repeat showing of a single play, or even a portion of a play, is essential to proper analysis and training. Simple forward and reverse switches enable us to show the required scene with a minimum of interruption and delay. A flick of the switch and the projector immediately reverses; another flick and the scene is on again.

The single frame analysis is essential for some plays. Our projector permits us to do this and still have a bright image for study. The coach and the players can see the details

and gain the necessary information to improve their game.

USING FILMS FOR ANALYSIS

One of our major uses of films is the analysis of our game. We take movies of each of our games, both at home and on the road. On the Sunday following the game, the coaching staff has a meeting at which time the film is reviewed. Individual plays are reviewed; individual players are rated.

On the first day of practice, immediately following the last game, we show the film to our squad. Each player has the opportunity to see just what he did the preceding Saturday.

At this meeting, the game is discussed both with the squad as a whole and with individuals. Single frames are projected to illustrate learning situations; plays are repeated so that the squad can understand the strengths and weaknesses of a particular offense or defense.

FILMS FOR OPPONENT EVALUATION

Another major use of films by our staff is the study of opponents' techniques. On the first or second practice session following a game, we show our squad films of our next week's Big Ten opponents.

All Big Ten teams exchange film with one another. This free exchange rarely creates a problem, since most schools use a 1600-foot reel and use a wide angle lens in taking their pictures. Our wide screen system more than doubles the image size of ordinary 16-mm. movies. More than twice the field of play is filmed at one time and you can obtain the fabulous wide image with cinemascopic effect.

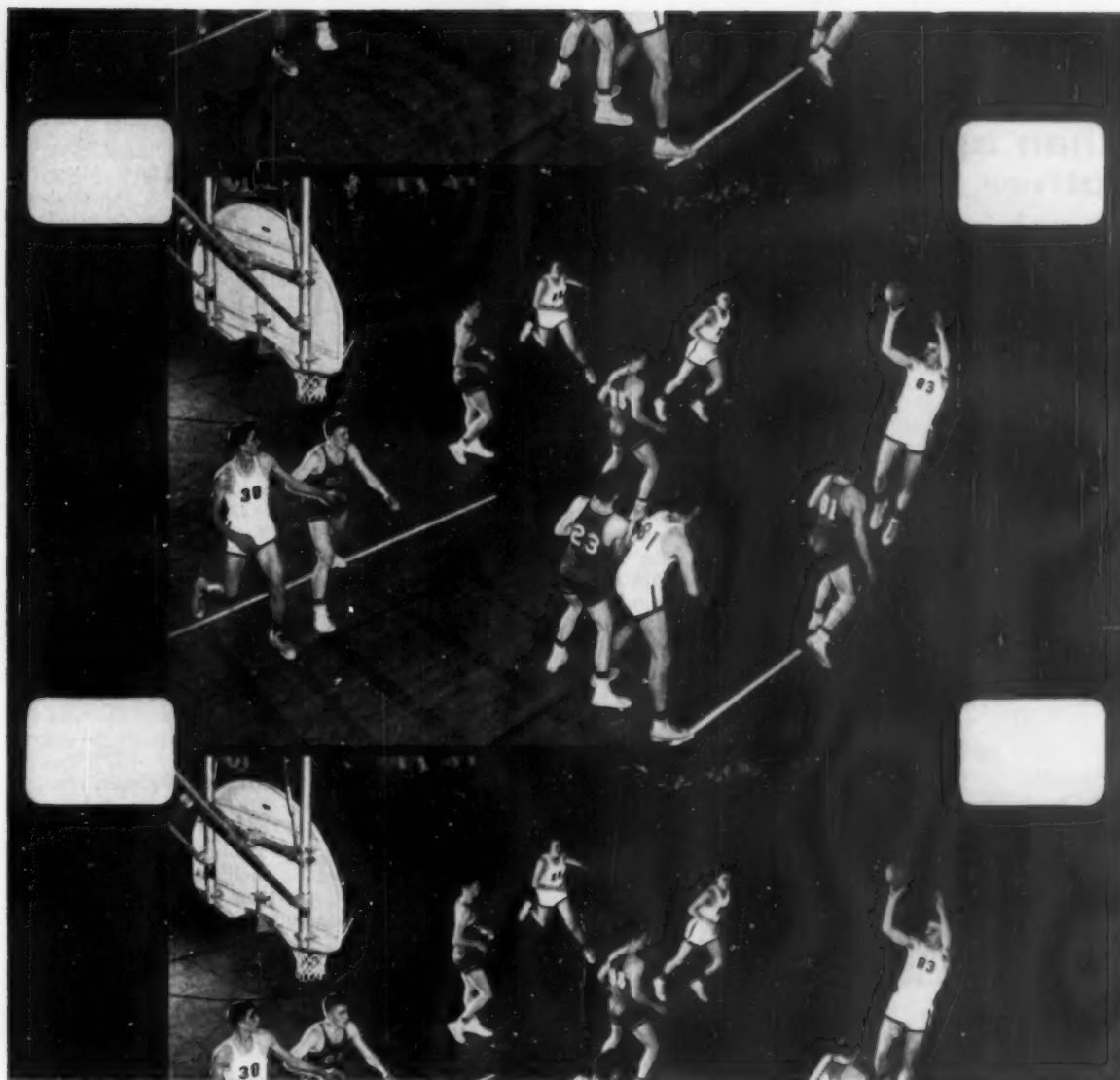
The same anamorphic lens that's used to produce this effect when shooting is used on the projector when showing the film, so that the actual investment is for only a single lens.

PLANNING AND TRAINING

Our use of motion pictures for planning and special training starts, to some extent, at the end of the season. At that time, our films for the entire previous season are projected for the entire coaching staff.

During this presentation, the films are broken down into offensive and defensive sections by the coaches.

By PAUL SHOULTS, Asst. Coach, Northwestern University



**You may know what's wrong
but you need a film to show your team**

No team is perfect. The winning team is the one that makes fewer mistakes. To reduce your team's errors a movie record of their games is one of the most helpful tools there is.

A film never forgets, misses nothing, spares no one. It is living proof for your players of the way they play.

DuPont has two 16-mm films that are ideally suited for sports movies—Types 930 (for daytime) and 931 (for indoor and poor weather shooting). They are high-speed, wide-latitude films, which means that you can count on good results even in poor light and when the exposure is not exactly right. And they can be processed extra fast. There is a processor near you to provide this service.

Write for a free showing of the 15-minute, 16-mm sound

movie, "The Assistant Coach", which shows how you can take your own movies of games—not only basketball, but football, swimming, track, baseball and many other sports.

E. I. du Pont de Nemours & Co. (Inc.) SC-1
2432-A Nemours Building, Wilmington 98, Delaware
☐ Send movie, "The Assistant Coach". I will return it within ten days from receipt.
☐ Send full data on Types 930 and 931 Films. Also send list of processors in this area who can give extra-fast service with these films.

Name _____ Title _____
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Better Things for Better Living . . . through Chemistry

Worn by more athletes than any other sock!



Wigwams are soft, springy, absorbent. STA-SIZED shrink-treating makes them hold their shape... prevents blisters, chafing and tenderness caused by poorly fitting socks. Many styles and colors to choose from... at leading dealers everywhere.



Colored toehold indicates sock size for easy pairing.

Size	Thread Color
9	Black
10	Green
11	Red
12	Blue
13	Orange

WIGWAM MILLS, INC.
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Hull, Quebec



for feet that compete!

The reels are then edited and distributed to the coaches concerned with these two phases of the game. They study them carefully in preparation for the next season.

During this presentation of all our films, special notes are made about sections helpful in training for individual positions. Copies of these sections of the film are made and edited into special training films that deal with each position of the squad. It's designed to instruct the particular squad we're working with, showing them the best ways of playing offense and defense in their individual positions.

Another phase of this program is conducted during the summer months. The coaching staff then has the opportunity to view the various systems employed by leading teams throughout the nation. These films are obtained through an exchange agreement with other schools.

The staff examines and evaluates the offensive and defensive deployments, forms some ratings of the different systems, and culls ideas for further development of their own squad.

OTHER USES OF FILMS

While the other uses of motion pictures aren't directly concerned with the training of our squad, they play an equally important role in building our team. Throughout the year, we use films of our games to show to Alumni clubs, civic groups, and other organizations. Taking our film and projector to these organizations, we build school and team good-will.

Motion pictures are also used to screen various high school prospects. This is a most important phase of our operation. Our Victor Silent 16-mm. Projector adapts itself very well to the many different types of high school films we see. Some high schools use the wide screen system; others use 2000-foot reels. In either case, our projector handles them and enables our coaching staff to evaluate the prospects.

Insofar as the actual shooting is concerned, we use an Eastman Cine Special 16-mm. camera with 200-foot magazines. For extra special occasions, a second camera may be pressed into service.

Ordinarily the games are shot in black and white. But on occasions we'll also shoot in color. The color stuff, however, is primarily for promotional rather than educational purposes.

For cinemascopic shooting, we use 2-inch, 2½-inch, and 3-inch lenses. This attaches to the camera (for

shooting) and to the projector (for actual screening).

Motion pictures play an important role in training our squads. The use of a versatile, rugged projector, capable of ultra slow-motion, bright screen single frame illumination and quick and simple forward-reverse action, enables us to get the most out of our films in our training program.

Dual-Purpose Pools

(Continued from page 32)

distances for competitive courses have wavered between meters and yards for many years. With good planning, both can be incorporated into your pool. (See diagrams.)

The inside length of a swimming pool should always be a fraction of an inch over the stated design, be it meters or yards. For example, a 75-foot pool is usually constructed 75-feet 1-inch.

Width: A minimum of 35 feet is recommended. Pool widths should be in multiples of seven feet. In order to have six lanes, you must have 42 feet. American and international swimming rules require swimmers' lanes to be 7 feet in width.

Cost is affected by such elements as local labor wages, material costs, size of pool, type, locations and shape of pool, the type and size of housing facilities, the water treatment system, and numerous other construction and equipment items.

The difference between the cost of a moderately priced pool and an expensive pool would be governed by the shape, such as abstract for example, which would increase the cost because of the complicated forming of the walls.

The pool mentioned in this article is simple in design and shape. Yet it still affords the room for instruction. Because of its depth, it should be less expensive to construct. The laying of tile should require less time and should be easier to do because of the flat and straight surface.

Safety: This type of pool eliminates a drop-off or even the decline to a greater depth. Only a ladder with three steps would be necessary. This factor, plus others, would make the entire area safer for use.

The facilities are designed to fulfill the dual purpose of general community use after school hours as well as the teaching and competitive requirements needed in the school program.

Used in a dual capacity, this facility will continue to provide sport and recreation for all ages and all persons in the community.



Waterbury, Conn.

4400 seats



Coraopolis, Pa.

3600 seats



Norfolk, Va.

3000 seats



Jennings, La.

1850 seats



Quakertown, Pa.

1170 seats



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of low-cost
seating comfort*

—FOR SCHOOLS OF EVERY SIZE

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Steel Deck Grandstands

Safe, sturdy steel grandstands by Pittsburgh-Des Moines offer lifetime permanence that protects the school investment plus complete design freedom in size and shape, thanks to unit-section construction that permits stands of any depth or length required. Write for detailed literature on watertight, weather-proof PDM Steel Grandstands, and let us consult with you.



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This new type of fibrous, resilient track provides a fast, true, non-skid surface that takes

both spikes and rubber soles, reduces maintenance to minimum, permits outdoor work all year long.

HOW ABOUT YOUR TRACK:

New Construction or Resurfacing?

ARE you planning the construction of a new track, or are you thinking about re-surfacing your present one? Whichever you're thinking of, many noteworthy advancements should be carefully investigated before breaking ground.

The ever-increasing interest in track and field has motivated the planning for new tracks and the rejuvenation of old ones. Although certain innovations are new in relation to track construction, they've long proven their worth in road construction. It's now possible to build a running track 3 inches deep directly on a base of sand or gravel 4 inches deep.

Purdue University has constructed such a track that has been in experimentation and use since 1952. The idea for the depth was conceived in 1950 when the outdoor track area was reconstructed on a new site. The new site had a sub-surface of sand and gravel. The depth of the track was determined after much consultation.

It was decided at the time that because of certain facts a track needn't be drained through its surface. The important factor seemed to be to rid the surface of flash water as quickly as possible. Another consideration was that funds weren't

available to build the desired track 18 inches in depth with the usual layers of materials.

The original track surface was put down only several inches deep and was composed of a cinder and clay mixture estimated 4 parts of cinders to 1 part of clay. This surface was used for four seasons until additional funds became available for more material.

During the period of waiting for available funds, cinders became not only difficult to come by but expensive to process to the desired depth. Actually, cinders aren't suitable over a period of time due to the breakdown, so a more desirable material was sought. In the summer of 1956, enough research had been completed to put the substitute material down for the needed remaining surface.

It was decided to put down only one inch of the new surface on a trial basis on the assumption that corrections would become necessary before completing the entire required depth. Several corrections were made and the final depth was applied in 1957. In May, 1958, the Big 10 Championships were held on the track and the following times were recorded, after a 2½ inch rainfall on the preceding day:

100-yd. Dash, :09.6; 220-yd. Dash (c), :21.2; One-Mile Run, 4:09.2; Two-Mile Run, 9:03.2; 440-yd. Dash, :45.8; 880-yd. Run, 1:50.8; 120-yd. High

Hurdles, :14.0; 220-yd. Low Hurdles (c), :23.9.

The selection of a site usually has its restrictions because of accessibility to the area and the necessity for combining the area with another sport to conserve funds. When possible, one should consider the top-soil, sub-soil, size of the track, prevailing wind, and the advantages of making the track higher than the surrounding ground.

The proper curb and measurements should be laid out in accordance with the Track and Field Guide. A qualified engineer should check the blueprints and be present during the construction so that he can certify the track upon completion.

The curbing can be constructed with red wood, block, steel, concrete, or such material that will survive the elements and remain stable. Over the years, concrete with a 4-inch width and an 18-inch depth has appeared to be the most popular. Presently the best type of concrete is one which contains air-entrained cement. The use of reinforcing rods overlapped assures horizontal and lateral stability.

The inside curbing should be higher than the outside curbing, allowing flash water to drain from the track to the outside and off. The difference in the height of the two curbs can be determined by adding ½ inch for every 48 inches of track width to the elevation of the outside curb.

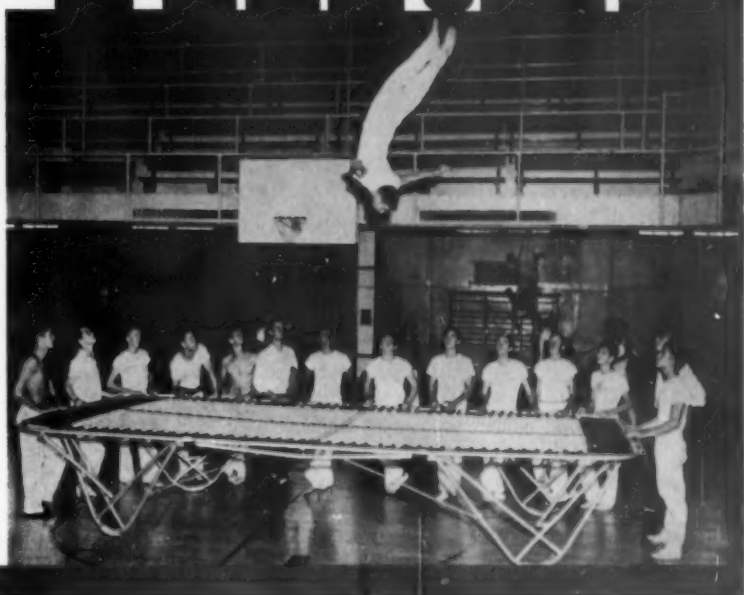
There should be an outlet in the

By **DAVE RANKIN**, (Track Coach) and **Prof. E. J. YODER** (Research Engineer), *Purdue University*

Gym Master's

BIG THREE

Only Gym Master offers THE BIG THREE trampolins for school use... THREE different sizes for YOUR particular needs. Each trampoline is designed for top performance in competition, training and exhibition; each trampoline has Gym Master's stronger, safer construction. All are easy to fold and store, and can be ordered with Gym Master's exclusive quick-turn adjuster to give you precise bed tension in seconds.



THE VARSITY

Proven the finest in schools and colleges throughout the country, the Gym Master Varsity meets all specifications for AAU, NCAA and all other competition. Performing area of 6 by 12 feet.

THE JUMBO

Rapidly growing in popularity for learning and competition, the Jumbo has a large 7 by 14 foot performing bed which gives greater confidence to learners, allows more liberty of action. Lively performance!

THE TITAN

A greatly enlarged performing bed on a trampoline that is practical to use and store in any gym...a development only possible with Gym Master's superior design. Room for concurrent stunts on a tremendously live bed measuring a full 8 by 16 feet!

... Learn more about THE BIG THREE—and about Gym Master's complete line of trampolins and gymnastic equipment. Send TO-DAY for the big new catalog and price list.

write:

FENNER  HAMILTON
company

3200 SOUTH ZUNI STREET
ENGLEWOOD, COLORADO

**For that Floor
You Really WANT**



NORTHERN MAPLE



Gym, Andrew Hill H. S., San Jose, Calif.
Arch., Ed. W. Kress — Installer, Best Floor Co.

Don't Just "Wish"

Don't turn green with envy every time you see that latest "Big Ten" Gym in Columbus, O. in a magazine or on TV!

It's floored with J. W. Wells' famed DIAMOND HARD Northern Maple, sure! — But so is this High School Gym in California. (And hundreds more.)

Tell 'em Facts!

Call it "multi-purpose" — Combine gym and auditorium and you may have to remind them — "Most of the time it will be a gym." Lay any of those thin-skinned coverings on bare concrete and it's still dead — tough on the kids — mince meat for those PTA'ers in "spikes" — sad substitute for J. W. WELLS DIAMOND HARD Northern Maple.

Point Out Savings

Remember too, DIAMOND HARD Northern Maple in 2nd and 3rd grade is just as lively, undentable as clear-grained 1st grade — costs 10% to 50% less.

And if you need a money-maker to help pay for it — look into community roller skating — as many other schools have. (What beats Maple for skating?)

WRITE FOR

"Money-Making Gym Floors"

J. W. WELLS
LUMBER COMPANY

Menominee 1, Michigan

outside curbing every 15 to 20 feet. The top of the outside curbing should be 3 inches above ground level. It has been generally acknowledged that if surface water can be kept moving, the surface of the track won't become unduly soggy. The worst lane(s) will always be toward the outside of the track.

A track surface will absorb water until it becomes saturated. Proper compaction depends on the moisture content of the material. A properly compacted surface will not absorb much water nor will it pass it through to lower depths.

Since for this type of design, there's no tile drainage under the track base, drains may be constructed in the infield area so that surplus water won't be forced on to the track. Likewise, drainage may be established around the outside curbing, if necessary, to carry away the water coming off the track.

The subgrade level must be established before the base can be started. This is determined by subtracting the depth of the base (4 inches), the track depth (3 inches), and the distance from the top of the curbing to the running surface (2 inches) from the elevation of the curb. This makes the subgrade level 9 inches below the top of the curb.

If you propose to add a new surface to your present track, grade off enough of the present surface to allow a 3-inch addition of the new mixture. After the old surface is removed, lightly scarify the remaining surface to allow a bond.

The base course for the new track construction may be of sand, or gravel passing a 1/2 inch sieve. The sand or gravel serves as a transition

between the subgrade and track composition, and provides a permanent surface to be built on. The material for the base course should be leveled by a grader to the desired grade. Caution should be exercised not to disturb the base course any more than necessary.

The lack of cinders in many locales is becoming more and more evident. Cinders are basically porous and will break down under the usual use of running and rolling. Freezing and thawing will also aid in the reduction to powder form. The cinder is in a perpetual state of disintegration.

To maintain the proper grain size, a material must retain its original state. A ground shale was used at Purdue as a substitute for cinders. This ground shale is fired at a very high temperature and results in a round grain having a strong grain structure.

Graded sizes of this shale are available and the desirable size (passing a 1/4" screen) can be obtained ready for use. The product can generally be obtained throughout the country from a company that makes concrete block or from the original supplier. Gradation analysis should be made on each potential supply, as the percentages of fines and coarse may vary with the different sources.

The primary factor which controls the stability of track mixtures is the ratio of binder material to aggregate. An aggregate which contains no binder usually has relatively low stability but is free draining and unaffected by frost action. It's also quite difficult to handle due to its non-cohesive nature. It gains its strength from grain-to-grain contact.

An aggregate which contains suffi-

RESILIENT COMPOSITION TRACK SURFACING

PERHAPS the outstanding trend in track and field construction is the steady gravitation toward all-weather surfacing. Track coaches agree that the ideal track or field event surface should possess these seven characteristics:

1. Stability—should be firm in composition yet afford perfect traction.
2. Resiliency—should be cushion-like to minimize shin splints or unnecessary stresses on leg muscles.
3. Low maintenance cost.
4. Consistency—its character must remain constant in all types of weather during competition or practice.
5. Durability—long life expectancy.
6. Safeness—the surface should be non-abrasive, protecting runners from painful injuries due to falls.
7. Attractiveness—surface should appear "well groomed."

At least two neoteric products,

heretofore successfully employed on playgrounds, tennis courts, and other areas, are now being employed with hugely impressive results in track and field construction—either as runways for field events or as a surfacing for the track itself.

"Grasstex," a fibrous, resilient asphalt composition, has come through handsomely as a surface for the U. of Florida track and as runways at the U. of Pennsylvania, scene of the last USA-USSR international meet.

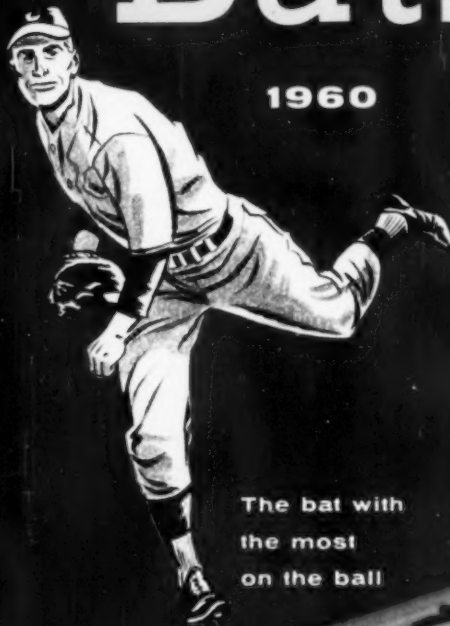
"Perma-Track", a rubberized surface material composed of graded rubber aggregate, bound together with bituminous and rubber products to yield a dense compound, is likewise providing superb runway surfacing at Boston University, Van Cortlandt Park Stadium (N. Y.), and various Eastern high schools.

From the results thus far obtained, it appears likely that these all-weather surfacings will dominate future track construction.

FOR BIG LEAGUE POWER...

Adirondack Bats

1960



The bat with
the most
on the ball

ADIRONDACK BATS, INC.
Northern
White Ash
ADIRONDACK
302
DOLGEVILLE, NEW YORK
Whisper Action

ADIRONDACK BATS, Inc., DOLGEVILLE, NEW YORK



ADIRONDACK BASEBALL BATS

SIGNATURE GROUP

Del Ennis, Vic Wertz, Bob Thomson, Hank Bauer, Gil Hodges, Larry Doby, Gran Hamner, Al Dark, Del Crandall, Ray "Ike" Boone, Puddinhead Jones, Rocky Bridges, Joe Adcock, Danny O'Connell, Willie Mays, Hal Smith, Daryl Spencer, Tony Kubek, Albie Pearson, Jim Lemon, Jim Davenport, Jim McAnany.

STANDARD TYPES

Standard bats available in popular player types . . . Ruth, Williams, DiMaggio, Kell, Stephens, Kiner, Musial, Mantle, Robinson, Kuenn, Mathews, Kaline, Aaron.

302SP

Finest selection SECOND GROWTH NORTHERN WHITE ASH, professional finish. Special turnings designed for high school, prep school and American Legion Players. Packaged one dozen to the carton. Assorted models 32"—34" in each dozen. Shipping weight—27 lbs. Note: Meets specifications for Pony and Babe Ruth League. Also available in solid length packaging.

302BL

Finest selection SECOND GROWTH NORTHERN WHITE ASH, black finish with gold stamping, weight controlled for perfect balance, patterned after models used by famous Major League hitters. Bats to the carton—1 dozen. Lengths 32"—36". Shipping weight—28 lbs. Available in A, B, C and solid length packaging.

282

Select SECOND GROWTH NORTHERN WHITE ASH, natural finish. Manufactured in same models and types as 302. Bats to the carton—1 dozen. Lengths 32"—36". Shipping weight—28 lbs. Six different models guaranteed in each carton of one dozen in A B C packaging, four different models in solid packaging.

Pkg. A—Asst. Models—2/33", 5/34", 5/35"; Pkg. B—Asst. Models—4/33", 4/34", 4/35"; Pkg. C—Asst. Models—2/34", 6/35", 4/36"

262

Select SECOND GROWTH NORTHERN WHITE ASH, light tan finish. Bats to the carton—1 dozen assorted. Lengths 32"—36". Shipping weight—28 lbs. Available in A B C packaging.

Pkg. A—Asst. Models—2/33", 5/34", 5/35"; Pkg. B—Asst. Models—4/33", 4/34", 4/35"; Pkg. C—Asst. Models—2/34", 6/35", 4/36"

Also available in solid length packaging.

212

Selected NORTHERN WHITE ASH, natural finish. Assorted models and lengths ranging from 32"—35". Bats to the carton—1 dozen. Shipping weight—28 lbs. Also available in solid length packaging.

222

Quality NORTHERN WHITE ASH, antique finish. Assorted models and lengths ranging from 32"—35". Bats to the carton—1 dozen. Shipping weight—28 lbs.

4100

PRO LEAGUER. Selected Northern stock, tan finish. Assorted models and lengths ranging from 32"—35". Bats to the carton—1 dozen. Shipping weight—28 lbs.

1500

BOY'S MODEL. Finest selection Northern stock, tan finish. Assorted autographs. Bats to the carton—3 dozen. Length 29". Shipping weight—50 lbs.

ALL STOCK OPEN AIR SEASONED

302

Finest selection SECOND GROWTH NORTHERN WHITE ASH, professional finish, weight controlled for perfect balance, patterned after models used by famous Major League hitters. Bats to the carton—1 dozen. Lengths 32"—36". Shipping weight—28 lbs. Manufactured in the models listed opposite: six different models guaranteed in each carton of one dozen in A B C packaging, four different models in solid packaging (see packaging note on back page).

Package A—Assorted Models—2/33", 5/34", 5/35"
 Package B—Assorted Models—4/33", 4/34", 4/35"
 Package C—Assorted Models—2/34", 6/35", 4/36"
 Solid Lengths—32"—36"



302



302SP



302BL



282



262



212



222



4100



1500

**SPECIAL
BATS
DESIGNED**

302S

Finest selection SECOND GROWTH NORTHERN WHITE ASH, professional finish. Manufactured in many of same models as 302 but turned to slightly smaller specifications for the particular use of the early high school age group. Bats to the carton—1 dozen assorted. Lengths 32"—34". Shipping weight—26 lbs. Also available in solid length packaging.

**FOR
PONY
LEAGUE**

282S

Select SECOND GROWTH NORTHERN WHITE ASH, clear finish. Manufactured in many of same models and types as 302 but turned to slightly smaller specifications to meet requirements of high school and prep school players. Bats to the carton—1 dozen assorted. Lengths 32"—34". Shipping weight—26 lbs. Also available in solid length packaging.

**AND
BABE RUTH
LEAGUE**

262S

Select SECOND GROWTH NORTHERN WHITE ASH, light tan finish. Manufactured in assorted models but turned to slightly smaller specifications to meet requirements of high school and prep school players. Bats to the carton—1 dozen assorted. Lengths 32"—34". Shipping weight—26 lbs. Also available in solid length packaging.

PLAY

252S

High quality SECOND GROWTH NORTHERN WHITE ASH, white handle, brown barrel. Manufactured in assorted models but turned to slightly smaller specifications to meet requirements of high school and prep school players. Bats to the carton—1 dozen assorted. Lengths 32"—34". Shipping weight—26 lbs. Also available in solid length packaging.

FUNGO

112

Outfield Fungo, Finest selection NORTHERN WHITE ASH, natural finish. Bats to the carton—1 dozen. Lengths 36" and 37". Shipping weight—24 lbs. Also available in 3 each and 6 each cartons.

BATS

102

Infield Fungo, Finest selection NORTHERN WHITE ASH, natural finish. Bats to the carton—1 dozen. Lengths 33" and 34". Shipping weight—24 lbs. Also available in 3 each and 6 each cartons.

302J

Finest selection SECOND GROWTH NORTHERN WHITE ASH, professional finish, assorted autographs, meets specifications for Little League play. Bats to the carton—1 dozen assorted. Lengths 29"—32". Shipping weight—24 lbs. Also available in solid length packaging including 27"—28"—33".

**APPROVED
LITTLE**

302JB

Finest selection second growth northern white ash, open air seasoned, ebony finish, taped handle, assorted autographs, meets specifications for little league play. Bats to the carton—one dozen assorted. Lengths 29"—32". Shipping weight—24 lbs. Also available in solid length packaging, including 27", 28", 33".

**LEAGUE
BATS**

282J

Select SECOND GROWTH NORTHERN WHITE ASH, natural finish, assorted autographs, meets specifications for Little League play. Bats to the carton—1 dozen assorted. Lengths 29"—32". Shipping weight—24 lbs. Also available in solid length packaging including 27"—28"—33".

282JC

Select SECOND GROWTH NORTHERN WHITE ASH, two tone red and white finish, assorted autographs, meets specifications for Little League play. Bats to the carton—1 dozen assorted. Lengths 29"—32". Shipping weight—24 lbs. Also available in solid length packaging including 27"—28"—33".



252J

Select SECOND GROWTH NORTHERN WHITE ASH, white handle, brown barrel, assorted autographs, meets specifications for Little League play. Bats to the carton—1 dozen assorted. Lengths 29"—32". Shipping weight—24 lbs. Also available in solid length packaging including 27"—28"—33".

300J

Select NORTHERN STOCK. Meets specifications for Little League play. White handle, black barrel. Packaged 1 dozen to carton. Lengths 29"—32". Shipping weight—24 lbs.

242J

Select NORTHERN STOCK, tan finish, assorted autographs, meets specifications for Little League play. Bats to the carton—1 dozen assorted. Lengths 29"—32". Shipping weight—24 lbs.

4100J

NORTHERN STOCK. Meets specifications for Little League play. Black finish. Length—29"—32". Shipping weight—24 lbs.

ALL STOCK OPEN AIR SEASONED



302S



282S



262S



252S



112



102



302J



302JB



282J



282JC



252J



300J



242J



4100J

291 OFFICIAL SOFTBALL BAT. Finest selection SECOND GROWTH NORTHERN WHITE ASH, black finish. Thin grip model. Friction grip. Bats to the carton—1 dozen. Lengths 33"—34". Shipping weight—24 lbs. Diameter 2½".

291H OFFICIAL SOFTBALL BAT. Finest selection Hickory, antique finish. Thin grip model. Bats to the carton—1 dozen. Lengths 33"—34". Shipping weight—24 lbs.

281 OFFICIAL SOFTBALL BAT. Finest selection SECOND GROWTH NORTHERN WHITE ASH, antique finish. A professional softball bat with extra long hitting surface and large handle. Friction grip. Diameter 2½". Bats to the carton—1 dozen. Lengths 33"—34". Shipping weight—25 lbs.
Also available in 6 each cartons.

271 OFFICIAL SOFTBALL BAT. Finest selection SECOND GROWTH NORTHERN WHITE ASH, black ebony finish. Diameter 2½". Friction grip. Bats to the carton—1 dozen assorted. Lengths 33"—34". Shipping weight—24 lbs.

271B OFFICIAL SOFTBALL BAT—Bottle type, black ebony finish. Finest selection SECOND GROWTH NORTHERN WHITE ASH. Diameter 2½". Friction grip. Bats to the carton—1 dozen assorted. Lengths 33"—34". Shipping weight—24 lbs.

**ADIRONDACK
SOFTBALL**

261 A FAST BALL BAT WITH A LARGER BARREL. Specially designed to meet the requirements of leagues using the larger softball. Selected SECOND GROWTH NORTHERN WHITE ASH, natural finish. Friction grip. Bats to the carton—1 dozen assorted. Lengths 33"—34". Shipping weight—26 lbs.

BATS

251 OFFICIAL SOFTBALL BAT. Finest selection SECOND GROWTH NORTHERN WHITE ASH, natural finish. Diameter 2½". Friction grip. Bats to the carton—1 dozen assorted. Lengths 33"—34". Shipping weight—24 lbs.

251B OFFICIAL SOFTBALL BAT. 251 softball bat in bottle models.

G 251 OFFICIAL SOFTBALL BAT. 251 softball bat in green.

R 251 OFFICIAL SOFTBALL BAT. 251 softball bat in red.

201 Official softball bat selected northern stock, open air seasoned, ebony finish. A heavier than average softball bat, ideal for slow pitch play, friction grip. Bats to the carton—one dozen assorted lengths 33"—34". Shipping weight—26 lbs.
201TG 201 softball bat in thin grip model.

241 OFFICIAL SOFTBALL BAT. Finest selection SECOND GROWTH NORTHERN WHITE ASH, clear finish. Diameter 2½". Friction grip. Bats to the carton—1 dozen assorted. Lengths 33"—34". Shipping weight—24 lbs.
241B OFFICIAL SOFTBALL BAT. 241 softball bat in bottle models.

231 OFFICIAL SOFTBALL BAT. Quality selection SECOND GROWTH NORTHERN WHITE ASH, light tan finish. Flock grip. Bats to the carton—1 dozen. Lengths 33"—34". Shipping weight—24 lbs.

191 OFFICIAL SOFTBALL BAT. High quality SECOND GROWTH NORTHERN WHITE ASH, red metal finish. Diameter 2½" assorted to 2⅞". Friction grip. Bats to the carton—1 dozen. Lengths 33"—34". Shipping weight—24 lbs.

181 OFFICIAL SOFTBALL BAT, quality SECOND GROWTH NORTHERN WHITE ASH, white finish. Diameter 2¼" to 2⅞". Friction grip. Bats to the carton—1 dozen assorted. Lengths 33"—34". Shipping weight—24 lbs.
181B OFFICIAL SOFTBALL BAT. 181 softball bat in bottle models.

ALL STOCK OPEN AIR SEASONED



291



291H



281



271



271B



261



251



G 251



R 251



201



241



231



191



181

A ALL STOCK OPEN AIR SEASONED



171

OFFICIAL SOFTBALL BAT, selected Northern stock, antique finish. Diameter $2\frac{1}{4}$ " to $2\frac{1}{2}$ ". Friction grip. Bats to the carton—1 dozen assorted. Lengths 33"—34". Shipping weight—24 lbs.



171G

OFFICIAL SOFTBALL BAT, selected Northern stock. Antique finish. Designed for girl softball players. Blue tape grip, 2" to $2\frac{1}{4}$ " diameter. Bats to the carton—1 dozen. Lengths 33", 34". Shipping weight—23 lbs. Also available in 31", 32" solid length packaging.



161

ADIRONDACK SOFTBALL

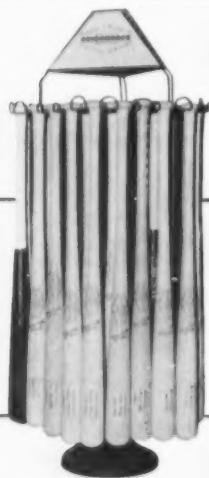
OFFICIAL SOFTBALL BAT, selected Northern stock, ash and hardwoods, saddle tan finish. Diameter $2\frac{1}{4}$ " to $2\frac{1}{2}$ ". Friction grip. Bats to the carton—1 dozen assorted. Lengths 33"—34". Shipping weight—24 lbs.

BATS



G161

OFFICIAL SOFTBALL BAT. 161 softball bat in green.



This ADIRONDACK Bat Rack
Ideal For Displaying Bats



R161

OFFICIAL SOFTBALL BAT. 161 softball bat in red.



218E

OFFICIAL SOFTBALL BAT, selected SECOND GROWTH NORTHERN WHITE ASH, tan finish. A bat specifically designed for use by schools and recreation departments in indoor and outdoor games. Diameter 2". Friction grip. Bats to the carton—1 dozen. Lengths 29"—31". Shipping weight—22 lbs.



141

OFFICIAL SOFTBALL BAT, Northern stock, black finish with white stamping. Diameter 2" to $2\frac{1}{4}$ ". Friction grip. Bats to the carton—3 dozen assorted. Lengths 33"—34". Shipping weight—70 lbs.

cient binder to fill all the voids between the aggregate grains still gains its strength from grain-to-grain contact, but in addition won't permit water to pass through it nor resist freezing and thawing. This type of material is difficult to compact and can be handled with ease during construction.

At the other extreme, a material which contains a large amount of binder has no grain-to-grain contact and the aggregate merely floats in the binder. Experience has shown that for best services on a running track, the ratio of binder to aggregate should be that corresponding to the latter case—remembering that too much binder will result in a sticky and soft surface.

In practice, it isn't practical to determine the exact ratio but several points should be considered. First, the amount of binder required decreases as the size of the aggregate grains increases. Second, since the quality of the track is really determined by the ratio of volume of binder to the volume of aggregate, moisture in the materials at the time of mixing plays an important role. Most clay binders expand when they absorb water. Likewise, most cinders and sand also expand when they absorb water.

An estimate can be made of the proper proportion by mixing various ratios of aggregate and binder together and pouring these mixtures into a bucket. For example, mix the materials together at ratios of 1:1, 2:1, 3:1, 4:1, 5:1, and 6:1 by weight. Pour each in turn into a bucket, making certain the bucket is full (flush with the surface) each time. Weigh each of these. The mixture that weighs the greatest amount is the best, and gives the best compaction.

This simple test is best made when the materials are slightly damp. If, during the mixing operation for track construction, the materials are very wet, it's necessary to correct for this by adjusting the ratios accordingly.

Clay has been and still is an acceptable binder, but all types of clay aren't acceptable. A sample of the proposed clay should be tested as to plasticity and grain size. Often a silt will visually appear to be the desired product. After the correct clay is established, it should be screened for any rock content and reduced to a powder form for mixing purposes.

The quantity to fill the track area can be estimated on a cubic yard basis and then further reduced to the proper ratio to order the necessary quantities of shale and clay. It's advisable to have the clay processed for use when the shale is delivered. The materials should be kept covered to keep the moisture absorption to a minimum. Waterproof canvas or commercial plastic covers are suitable as protection against possible rain.

An area close to the track should be picked for the storage of shale and clay; it should be free of any rock or other foreign matter. The shale and clay should be piled in separate par-

allel piles about 8 to 10 feet apart. A moisture-content test should be taken of the two materials if possible every day.

The moisture content of either material will play an important part in determining the final ratio. Our very first attempt at mixing the two materials was done by a 4-shovel-to-1-shovel ratio. The mixture didn't look right after it was on the track, so another analysis was run. It was found that the ratio had come out 6:1 instead of the planned 4:1. It was then decided to take a moisture-content test every morning before the mixing started and to determine the proper ratio by dry weight.

A plaster mixer should be obtained for the mixing procedure. The larger the volume, the quicker the job can be completed. The plaster mixer will amply mix the materials in about 1½ minutes; whereas a concrete mixer will take about 4 to 5 minutes for the same volume. The mixer should be placed between the two parallel piles on a platform, so that it will be possible to dump the completed mix directly into a carrier.

The correct ratio is determined by gradation tests, the correct dry weight is determined from the moisture tests, and the actual amount is determined by scale weight. The best container for handling the materials is a metal bushel basket. The weight ratios should be kept in multiples of 50 to 55 pounds for the basket capacity. Five baskets are necessary for expediting a 4-to-1 ratio.

The carrier used to transport the mixture to the track area should be of such height that a man standing on the ground can shovel from it. A metal-sided jeep trailer is just the ticket for such an operation. The mixture can first be put on the track about two inches in depth. It should be put down in a fairly uniform manner to make the leveling—before the final topping—as easy as possible. The ordinary wooden float idea can be employed to level out the first depth.

It's also easier if, at the end of each day's work, the mixture is floated out. The weather should be suitable so that the material can be put down on consecutive days until the operation is finished. Tire-marks made by the necessary vehicles won't prove disadvantageous. The final inch or so should be put on by hand shoveling in a fanning manner. This will facilitate a quicker leveling when the final floating and brushing is done.

After the track has been filled to the desired level, floated, and brushed, a cord can be stretched curb to curb every 10 yards to detect any low spots. The low spots can be filled and more floating, brushing, and then rolled. The float or brush shouldn't be of such weight that the material will pile up excessively in front of it during the leveling process. Winter weather is a great leveling agent, as is excessive rainfall.

When and how to compact a track is another item of importance. After

(Continued on page 54)

NEW TEAM ITEMS

WEIGHT JACKET



The "Don Canham" All Sports Weighted Training Jacket used by athletes in practice to build strength and speed for this added 10 lb. weight. When jacket is removed the athlete has "lost" 10 lbs. without loss of the added strength. This is the only weight training device that lets the athlete keep the added weight OVER the center of gravity. Removable weights slip in and out of pockets. . . . Used now by leading basketball, track and football coaches from coast to coast.

One Jacket \$9.95 (10 lbs.)
Six Jackets \$8.95 each
Additional 2½ pound weights \$1.25 each

HEEL CUP



A new hard fiber heel cup that prevents "Stone Bruises" of the heel. Fits in any athletic shoe to distribute shock on impact. An absolute must for track and field for jumpers, vaulters and hurdlers. A great aid for any sport where heel impact might cause injury. Steel strong, feather light and paper thin. Comes in Small, Medium and Large for either foot (six sizes).

One cup \$1.99
Six cups (three sizes, each foot) \$9.95
Six cups, any assortment \$10.50

BASKETBALL FLASHERS



Five Basketball Foul Flashers. Heavy Plastic, screened on both sides with 5½ inch numbers. Held up when a foul is called to keep coaches, fans, press and players informed of the fouls on any player.

Set of Five Flashers \$5.95

DON CANHAM'S
Wolverine Sports Supply
303 South Main Street
Ann Arbor 2, Michigan



Nighttime view of the New Brighton football field. Four towers lighting the right side of field have been replaced with two high output Wide-Lites. Two of the existing incandescent units on each of the

Modernize Your Lighting System!

THE New Brighton, Penna., school board recently assembled for a night meeting on the high school football field to discuss the inadequacy of the plant's floodlighting system.

The board wanted to do everything possible to improve the lighting. But budget limitations imposed a severe hardship.

The field was a relatively old one, with incandescent units placed on eight 40-foot towers 20 feet from the sidelines. Each tower possessed eight incandescent units using 1500-watt, 105-volt lamps operating at 120 volts.

The players had complained of the bad lighting, but Superintendent Ernest B. McNitt knew that the problem went deeper than just changing a few light bulbs. It couldn't be resolved by adding the same type of equipment as had been originally installed. This would require:

1. The replacement of the three existing 37½-kva transformers with three 50-kva transformers.

2. The installation of a new 400A. safety switch and new sub-feeders and wiring.

3. The elevation of the lighting towers from 40 feet to 60 feet.

Even if the board went to all this expense, only two additional incandescent units could be installed per pole (a total of 16). This would improve the distribution pattern, but wouldn't appreciably increase the lighting level.

In short, the existing transformers were loaded to capacity, and the panels and sub-feeders were too small for an additional load. This is a common problem with high school athletic fields built before 1950. Many have lighting systems in which the conductors are loaded and additional new incandescent fixtures would mean new wiring, new transformers, sometimes new poles and new cross-arms—a major, expensive project.

McNitt knew that the answer would have to be found somewhere else. It was.

They decided to modernize their lighting system by replacing a portion of their present fixtures with a new type of floodlight recently developed by the Wide-Lite Corporation of Houston, Tex.

Called High Output Wide-Lites,

these unique floodlights operate 1,000-watt color-corrected mercury vapor lamps at 1500 watts, increasing their light output by 50%.

Compared with the 1500-watt incandescent floodlights operating at 10% overvoltage, High Output Wide-Lites produce two to five times as much light output, depending on the condition of existing incandescent fixtures. Also, they provide a seven-times longer lamp life, yet consume 10% less power.

To demonstrate the advantages of this method of modernizing, two High Output Wide-Lites were installed on each pole on exactly half the length of the New Brighton field. From the 50-yard line to the opposite end zone, the old incandescents were left as they were.

The contrast caught the eye of the school board members. Where the eight Wide-Lites had been installed, the distribution of light was smoother, with less glare. The actual lighting level was increased by an average of 100%, with no change in the transformers, service or wiring being required. In fact, the electrical load was reduced 10% on each of the units replaced!

McNitt pointed out to the board members: "We can achieve the goal of getting better lighting in easy stages with Wide-Lites by budgeting a portion of the job each year. In a short time, we'll have a complete job. And the money spent will

(Concluded on page 59)



Who "blacked out" the receiver?

If your high school athletic field was built before 1950, chances are it is inadequately lighted.

And chances are there doesn't seem to be much you can do about it, because the conductors of your lighting system are loaded to capacity. Addition of new incandescent fixtures would mean new wiring, new transformers... possibly even new poles and new cross-arms — a major, expensive project.

Now, there is an *economical solution*

to this problem. With new High Output Wide-Lites, you can modernize your lighting system *without expensive rewiring*. You can *gain up to five times as much illumination*, yet actually reduce the total connected load, utilizing the same conductors.

To bring your lighting system up-to-date, you simply replace existing fixtures with more-efficient High Output Wide-Lites. And only the number of fixtures necessary to achieve the desired increase in illumination need be replaced. Wide-

Lite's unique broad pattern blends smoothly with those of adjacent units... provides smooth, even coverage without "hot spots" or heavy shadows.

For the first time, High Output Wide-Lites make possible the use of efficient color-corrected mercury vapor lamps for athletic field lighting. These modern lamps have more than seven times the life of incandescents, and produce a soft, glare-free light which more closely resembles actual daylight.

Get complete information on this effective low-cost method for modernizing your athletic field without expensive new construction. Fill in and mail the coupon today.



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THE BEST TURF FOR ATHLETIC FIELDS

By **ROBERT W. SCHERY**

Director, The Lawn Institute
Marysville, Ohio

THE best turfgrass for your athletic field? Simple. It's the one which will grow best, look best, and endure best under your climate and soil, your use, and your understanding of its needs.

Does that complicate naming names and eliminate blanket recommendations? Indeed it does. The complex world of living things is one of innumerable subtle undercurrents. "Best" becomes a matter of momentary opinion, varying with the season, with care (including chance weather), or even with the psychology of the moment. (Doesn't the grass look greener to a winner?).

So, perhaps we'd better start by narrowing our field of candidate grasses, eliminating first those which are obviously unsuitable, then suggesting regions for which or ways in which the remaining may prove excellent.

What are some of the factors which remove a grass from consideration?

First, if seed (or planting material) of a given species isn't readily available, it would be an unwise choice. Right away, then, only the proven lawn species need be generally considered. Fortunately these aren't only readily available, but attractive and durable as well.

Second, for an athletic field, prima

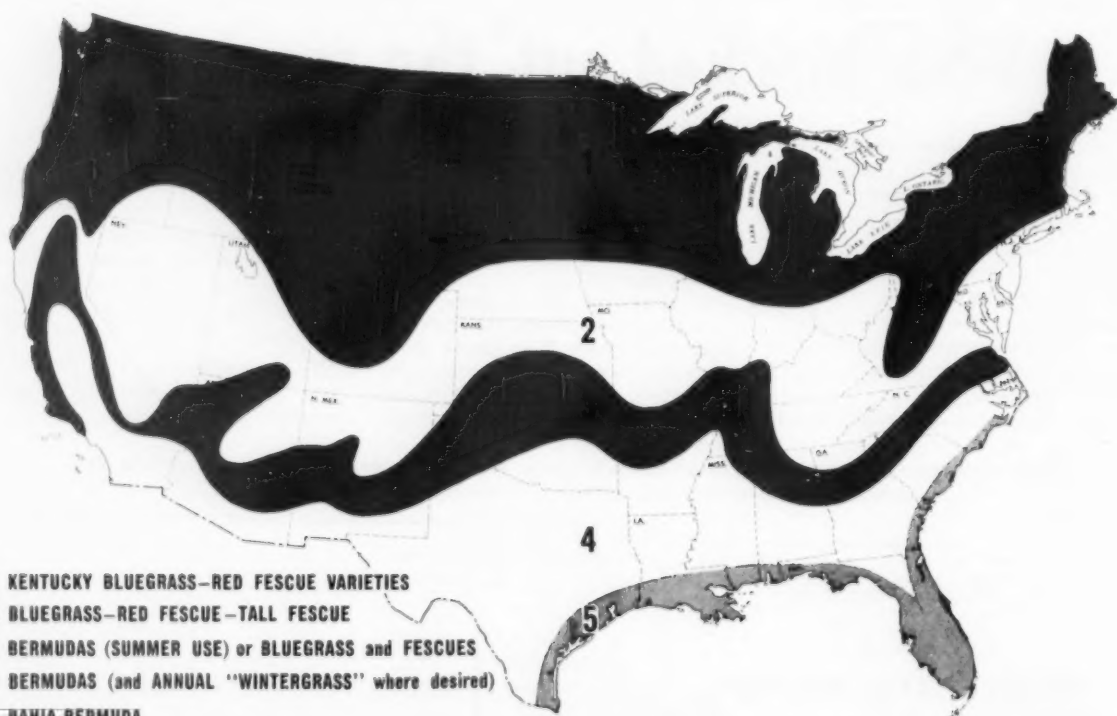
donna turfgrasses aren't wanted. A sports field is habitat for the rugged, whether athlete or grass. Grasses needing pampering—constant mowing, frequent thinning, hot weather prophylaxis—aren't the most suitable.

Annual bluegrass wouldn't ordinarily be chosen, nor the creeping bentgrass gems or the putting green. Shallow-rooted *Poa trivialis* would have no place, nor (except for temporary cover) short-lived annual species often dignified by the appellation "nurse grass." With mulching now an accepted practice, temporary cover is seldom needed, except perhaps for seasonal greenness as "winter grass" in the South.

Ryegrass, redtop, and other impermanent sorts are best left out of a seeding mixture. So are legumes such as clover, which, although hardy, are slippery underfoot.

Third, grasses with complicated needs or expensive tastes would be an infrequent choice. Colonial bentgrass should have frequent watering, thatch thinning, and disease control. Moreover, they're rather shallowly rooted, not the best footing. Except in a few mellow, humid climates such as coastal Oregon, they wouldn't be chosen.

Centipede grass in the South is



1 KENTUCKY BLUEGRASS-RED FESCUE VARIETIES

2 BLUEGRASS-RED FESCUE-TALL FESCUE

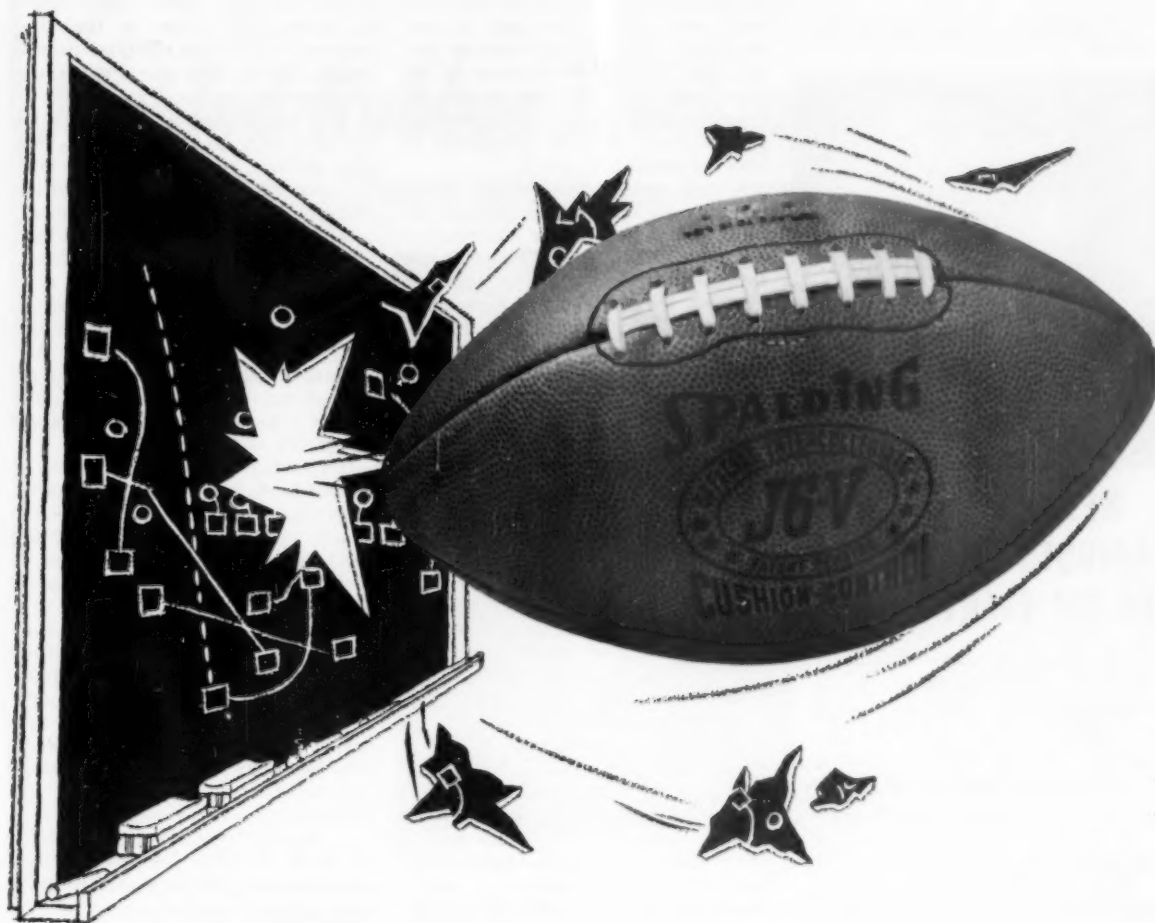
3 BERMUDAS (SUMMER USE) or BLUEGRASS and FESCUES

4 BERMUDAS (and ANNUAL "WINTERGRASS" where desired)

5 BAHIA-BERMUDA

Recommended turfs for five major zones—bluegrass mixtures north from Tennessee and bermudagrass south make standcut turfs. Each should be tended to fit its

cycle of growth. Kentucky bluegrass and its fescue companions should receive autumn attention and high mowing; southern grasses need spring-summer emphasis.



“BREAKTHROUGH!”

Never before has there been a football like the new *Cushion-Control®* J6V! Here is a football designed especially for today's air-minded game. Your quarterback will swear by it. Your ends will develop “gluefingers” overnight!

Here's how Spalding rewrote the book on making footballs:

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The exclusive new *cushion foam* layer gives this great new ball amazing “feel” and unbelievably

firm grip. Once your team plays with the new *Cushion-Control* J6V, they'll never want to play with any other ball again! Unconditionally guaranteed, of course!



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- 3** The exclusive layer of cushion foam.
- 4** The top-grade leather cover.

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*Pat. Pending

Dept. AJ-3—Please send P-F Adjusta-Bar Catalog P-F20

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East Stroudsburg, Pennsylvania

temperamental, becoming chlorotic when soil acidity isn't just so, and sometimes passing out entirely under high fertility. And some of the fine-textured bermudas, such as Uganda grass, require especially precise and frequent handling to look presentable.

Fourth, grasses slow to heal or recuperate are doubtful candidates for the athletic field, since scarring of the turf will be inevitable. Species which spread by runners or rhizomes can heal scars without reseeding. Thus, Kentucky bluegrass and creeping fescues in the North, or bermudagrass in the South, are more satisfactory on this count than are bunchgrasses such as ryegrass and tall fescue.

By the same token, slow-growing species, even if forming an excellent turf, are hardly fit candidates. Zoysias, gems for southern lawns, are generally too slow for athletic turfs.

But, remember, no turfgrass is completely perfect. One must forgive minor sins, if these are compensated for by improved performance in other ways or at appropriate seasons. We're thus happy to utilize fast-growing bermuda, even if it's a heavy feeder demanding frequent fertilization and mowing.

Even the best grass under the finest management cannot stand continued abuse. Football fields which serve both for practice and games (probably band practice as well) inevitably show fatigue before the season ends.

No turfgrass can resist the abrasion from continuous traffic, although good grasses are quick to recuperate when given rest. Bermudagrasses are especially recuperative during the warmer months (but are dormant after frost), while bluegrass sods recuperate best in autumn and spring.

An athletic field enjoys some advantages that a lawn does not. Shade and tree root competition are seldom a problem. Thus grasses intolerant of shade, such as the bermudas, needn't be ruled out.

Nor is infertility or drought too much of a consideration. Athletic fields normally have budgets to include fertilizer; and administrators don't shy from watering an athletic field, when this is apt to affect appearance during the season of play or be a safety factor.

Most athletic fields are conceived with fertilization and some means of watering in mind. And it's realized that athletic turf "takes a beating." Overseeding and repair are accepted parts of normal upkeep.

Finally, moderate coarseness isn't objectionable on an athletic field. Of course where more attractive turf-

grasses flourish, there's little reason to incorporate some of the "hay grasses." But tough climates require tough grasses that remain green in summer.

Tall fescue may be important ingredient in a seeding mixture, despite general unattractiveness close up, especially in regions neither completely northern nor southern.

All grasses have seasons of at least partial dormancy. Those actively growing at the time the field is in use should be selected. In some climates, repeated annual sowings may be necessary to extend green turf beyond the season of major use, such as autumn ryegrass seedings into southern bermuda where fields are to receive winter play.

Bermudagrass can even be used in middle latitudes, for fields primarily receiving summer use. Bermuda wouldn't prove satisfactory from the Ohio valley northward, because of early dormancy and lack of durability when dormant.

Athletic fields in the South concentrate chiefly upon grasses which thrive there during the relatively long growing season, from as early as March through October. If the field is to be used in winter, expendable seedings of northern grasses can be made in autumn, or the dormant turf can be colored green.

In the North, grasses which thrive in cooler weather are the obvious choice, even if in summer the field must endure some thinning of turf and an influx of weeds.

It's in the middle zones, neither completely North nor South, that the greatest difficulty lies in choosing the appropriate grass. Especial pains must be taken here to treat northern species with consideration during summer; or to try to keep southern grasses hardy, in fields receiving extensive use only in summer. There's no perfect answer.

THE GRASS CANDIDATES

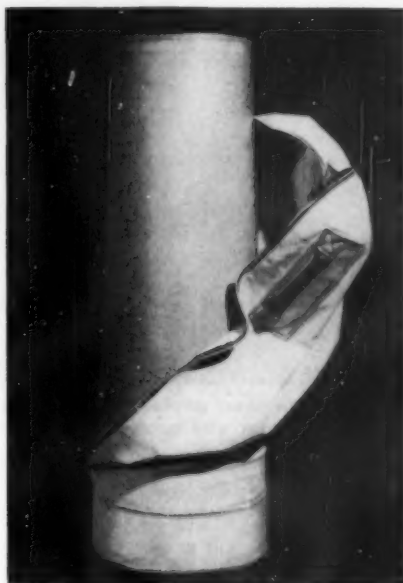
For the North. The map indicates the realm of Kentucky bluegrasses and red fescues, the species best serving year-around needs. Tall fescue is a durable addition for difficult locations, but rather coarse where not needed. When tall fescue, a bunch grass, is used, include sod-forming bluegrass with it.

A number of bluegrass varieties are on the market. Seldom would these be used entirely by themselves for an athletic field, although when mixed into a hard core of natural Kentucky bluegrass they might lend special attributes to the turf.

Merion is low growing, for example, but is slow to sprout, requires extra fertilization, and is especially subject to certain diseases. Natural Kentucky
(Continued on page 70)

Molded Rubber Blocking Dummies

WITH REPLACEABLE COVERS



U. S. Patent No. 2904337

MIDGET SIZE

Not a stand up dummy.

Ideal for blocking and tackling drills, especially for trap and linebacker blocking drills.

Total weight 13 lbs.
Height 40 inches
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Lightweight — No need to drag to and from field.

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over the years.***

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Swimming instructor Harold Hainfeld (author) photographs skills of his students, using slow-motion moving pictures to study their form and analyze the corrections that are needed.

Slow-Motion Movies for Swimming Coaches

ASK any physical education teacher, camp director, or recreation leader to name one of the more difficult skills to teach, and almost all will include swimming at or near the top of the list.

One of the more difficult things about working with beginners and even more advanced swimmers is to get them to realize their mistakes in the water and what corrections need to be made.

While certain animals have a natural instinct and ability to swim, humans must learn certain skills to be at home in the water. One of the best teaching aids in this respect is slow-motion analytical movies of the swimmer. These can be of distinct value to the learner, helping him improve his aquatic skills.

These films show the young swimmer exactly what he's doing in the water. They show the position of the body in the water, arm movements when taking strokes, position of the head while breathing, leg move-

ments and kicking, etc.

On the screen, the instructor and pupil can carefully study the corrections that must be made. When a pupil says, "I see what you mean," while viewing the projected film, he has visualized himself as a swimmer.

I've been taking swimming movies with a Bolex camera, shooting at 64 frames or pictures per second. They're projected at 16 frames a second, which produces an effect of time magnification.

The action remains on the screen four times as long as it actually took to perform the skill. This slow-motion film permits careful study and analysis by the teacher and student.

The training films are shot at an indoor pool using double 8-mm. fast film and a light bar with four 250-watt photoflood lights. The lens opening is f 4.5, affording excellent photographic results.

I use the black-and-white film,

since color seems unnecessary. In fact, I doubt if results could be obtained with the available 8-mm. color film under the lighting conditions that exist. The mistakes are the things I want to show on film, not expensive or beautiful color movies.

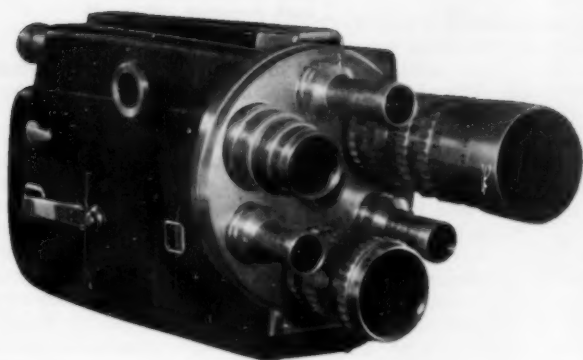
There are 80 frames to each foot of 8-mm. film. This is 8,000 pictures on a 100-foot side of film. Thus I get approximately 16,000 pictures on one 100-foot spool of double 8-mm. film. The cost is \$8.95, including processing of the film.

It's possible to shoot about two complete strokes in six seconds. Shooting at 64 frames a second would thus give you almost 400 frames, or about five feet of film. Hence, about 40 students' swimming skills can be filmed for analysis on one spool of 8-mm. film.

Film costs and processing come to about 20 cents per pupil—a very small investment for the improvements in swimming skills that result.

The less expensive 8-mm. film is used in preference to the 16-mm.

By **HAROLD HAINFELD**, Roosevelt School, Union City, N. J.



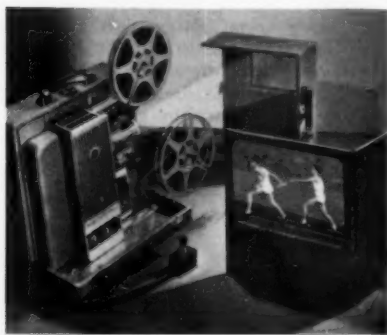
IS THAT PASS SMOOTH ENOUGH?

Movies tell you and show him

Movies show up his errors slow enough for you and him to see. Show him when and where he lets up, if he does. How he slows his pace or interrupts his timing. Or, if he's right on, movies help him keep his winning confidence.

Coaching and scouting with movies give you better than an even winning chance these days. Fair game in any sport—indoors as well as out—since Cine-Kodak Tri-X Reversal Film made special lights unnecessary. And since the Kodak K-100 Turret Camera made movie-taking practical for any school.

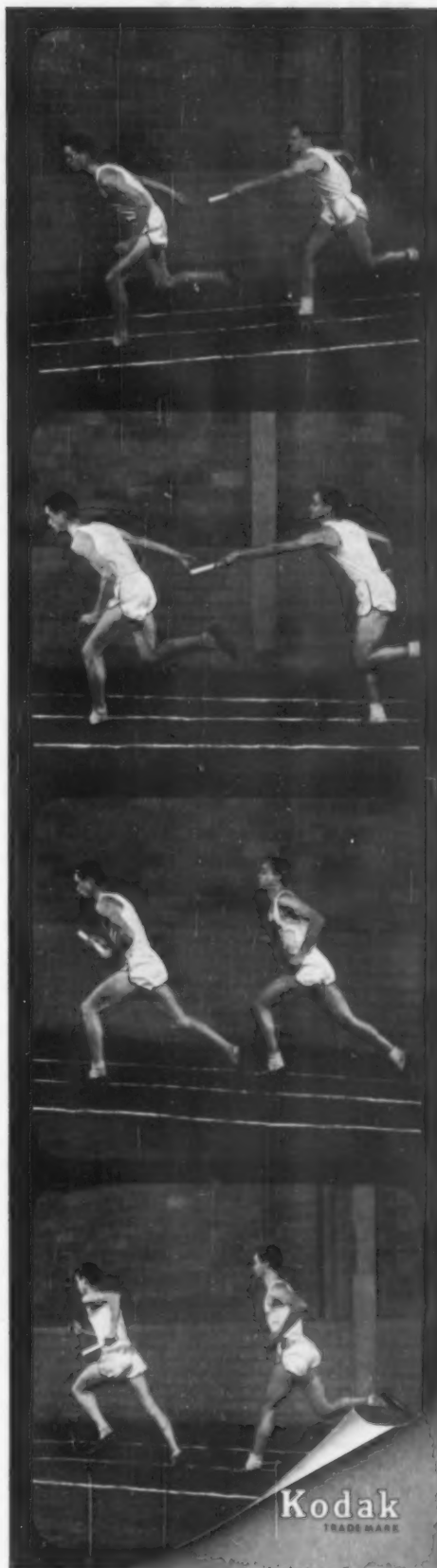
The K-100's three lenses let you cover action anywhere on the track, field, or court. Its long run at a single wind means you can film an entire 440-yard race without stopping.



To complete your movie coaching: the Kodak Analyst Movie Projector, with remote reversal switch to repeat crucial action... variable speeds to slow up flying feet on the screen.



Put your athletes in movies and perfect their winning form. Write for Bulletin V3-21, all about Kodak movie coaching equipment. Also available—information about quick processing of film in your area.



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"The Clinic That Is Often Imitated,
Never Duplicated"

because the film is viewed by small groups of students with similar difficulties. You don't need 16-mm. film where no large audience—which requires a large screen—will view the movies.

We use a screen about 4 feet by 3 feet, large enough for six or seven students to view their individual swimming problems. This is about four times larger than the present television screen used for classroom educational purposes, and works very well for my group.

The processing lab gets the film the following morning and it's ready by noon of the same day. This rapid service is an important factor with analytical movies. The individual can see his mistakes and good points on the screen at the very next swimming lesson. The instructor's suggestions are fresh in his mind and the student can visualize the necessary corrections.

For projection, I make film loops. The loop is a short piece of film with the ends spliced together. Each loop is made up from about five feet of film and shows the activity of one swimmer.

The film loop shows the individual's swimming skill over and over again. The pupil can thus see himself on the screen again and again, until the instructor's corrections are well established in his mind.

The photographing and projection of slow-motion analytical movies is just one area of aquatics that can be used to help those interested in improving skills. As the swimmer progresses, films can be used to correct other strokes.

Individuals can be shown how to improve in the backstroke, side-stroke, breaststroke, and butterfly. Racing and fancy diving techniques can be studied from film. Other phases of water skills might include life-saving and water-skiing form.

The following table shows the results of an experiment made with three non-swimming groups—one group (Group I) using movies as aids and the other two not using movies.

Each group was taught by Red Cross Water Safety instructors for one hour per day for six consecutive days. The film was shot on the third day and shown prior to the fourth day in the pool—each student in Group I being given six minutes to view the film loop of his swimming difficulty.

The tests were given on the sixth day, with the results shown at the top of the next column.

The study indicates that twice as many students can be taught to jump into the pool, level off and swim 25 yards after studying their

SWIMMING TEST RESULTS

	Gr. I	Gr. II	Gr. III
No. of students	18	20	17
No. students able to jump into pool, level off and swim 25 yards after one week instruction	13	7	6
% of swimmers	.72	.35	.36

form on films (with their instructor's comments) than those not using analytical movies.

Anytime there's action in the water, the movements involved in the skill can be studied and analyzed with slow-motion moving pictures. Physical educators, camp directors, YM and YWCA swimming teachers, Red Cross water safety instructors, waterfront counselors, Girl and Boy Scout swimming merit badge examiners, and others interested in improving the swimming skills of youngsters will find these pictures very helpful.

Practice doesn't necessarily lead to perfection. Correcting mistakes and improving good techniques will make better swimmers.

There were more than 8,000 deaths due to drowning last year. Many others were rescued by alert life guards and others. It would be unwise to claim that moving pictures could eliminate these tragedies. However, the swimming instructor should investigate any type of film production that can help youngsters in his community learn swimming skills better and more rapidly.

PLANNING SERVICE FACILITIES

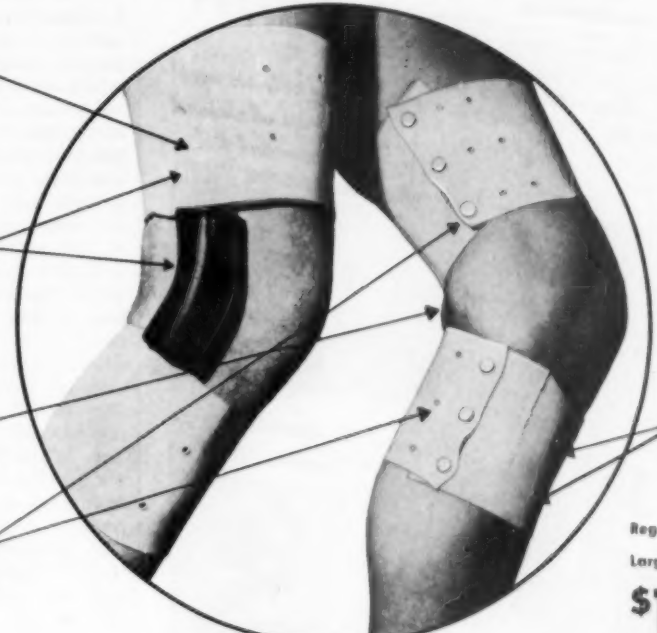
COMMON errors in planning indoor service facilities include, failure to provide:

- ... adequate locker and dressing space.
- ... dressing and shower area so as to reduce traffic to a minimum and establish clean, dry aisles for bare feet.
- ... a non-skid surface on dressing, shower, and towel room floors.
- ... teaching stations with service facilities.
- ... acoustical treatment where needed.
- ... properly located toilet facilities to serve all participants and spectators.
- ... doorways, hallways, or ramps to easily move equipment.
- ... equipment rooms for quick check-in and check-out.
- ... locker and dressing rooms with correct traffic pattern to pool.
- ... shower, toilet, and dressing rooms with sufficient floor slope and properly located drains.
- ... shower heads low enough and in such a position to keep spray within the shower room.
- ... shelves in toilet room.

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Steel joint with hyperextension stop and rotation for lower leg—all covered by soft, pliable rubber. 14-in. support rod extends thru thigh and calf band.

Leaves vital popliteal area free from pressure and constriction.

Adjustable in both thigh and calf—scientifically designed to stay firmly in place.

Used by both Rose Bowl teams.

Lateral support for maximum protection, mobility.

Lightweight—weighs only 17 oz. each.

Vent holes give air circulation.

Reg. Size . . . Thigh 20" and under
Large Size Thigh 24" to 30"

\$19.35 a pair

PROVED and BEING USED for:

Football (high school, college and professional players) . . . Basketball . . . Water Skiing . . . Snow Skiing . . . Golf . . . Wrestling . . . Pole Vaulting . . . Industrial Knee Injuries.

PREVENTIVE—The Palmer Knee Brace has proven that it prevents serious knee injuries and gives players maximum protection and mobility for all sports. Especially effective in preventing injuries from lateral blows to the knee joint.

CORRECTIVE—Enables players with knee injuries to play again with ease and assurance. Prevents further injury. Also used in industrial accident cases.

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Kit contains:

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- Hinged cold pack for shoulder, face, leg or curved areas.
- Square cold pack for any flat injured area.

Chemical packs stay cold for 3 days. Simply refreeze and they're ready for instant, on-the-spot action. Constructed from tough, durable plastic. Gets players back into action faster. Eliminates drippy, old-fashioned ice packs. Kit comes packed in sturdy, insulated plastic bag with carrying straps.

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HARVARD
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 60 State St., Boston, Mass.

Basketball Movies

(Continued from page 16)

from right to left while a player is bringing the ball upcourt, keep him on the extreme right hand side of the frame.

6. Know the teams so that you can anticipate the action. For example, if you know that the team scored upon is a fast-breaking club, you'll want to keep the camera running after a basket. However, if you know they're a deliberate team, you can stop the camera after the basket and pick up the action as they approach mid-court (unless, of course, the opponents pull a three-quarter or full-court press).

7. Get a shot of the scoreboard before foul shots, during time-outs, and at the end of quarters. Don't pan to the scoreboard while there's action on the court.

8. On a two-shot foul, just show the second shot (for rebounding alignment).

9. When the ball goes up into the air, don't go up with it. Coaches are more interested in seeing the position of the men underneath.

10. Whereas in football, you shoot at 32 frames per second, in basketball you should shoot at 24 frames per second.

SCHOLASTIC COACH readers will remember Dick Winik as the author of the excellent article on "Football Shooting Hints" last January. Dick is vice-president of Winik Films, one of the great pioneers in sports movies now probably the top sports specialists in the land. Winik crews cover the games of many of the biggest colleges in the country plus such famous New York professional teams as the Rangers, Giants, and Knickerbockers. They've been covering most of the action in Madison Square Garden for the past 25 years and have shot the games of more than 110 different colleges. Dick himself was the official photographer for the championship Minneapolis Lakers of the Mikan, Pollard era, and now shoots most of the major stuff for his outfit.

Choice of Photographer: The best man you can get, of course, is a professional photographer. If your budget prohibits this, look for an enthusiastic amateur with a sound knowledge of the game and the essential camera equipment.

The best type of amateur is a for-

mer athlete with good coordination and reflexes, who can anticipate the action. Since all coaches want a different sort of coverage, emphasizing particular aspects of offense or defense, the photographer should check with the coach before the game so that he can give him exactly what he wants.

Color Films: If you want to shoot a part of the game in color for assembly or promotional purposes, there are two fast films now available—Superanscochrome and Eastman Kodak SO-260 (daylight) or SO-270 (artificial lighting). These films have almost the same speed as fast black-and-white, making it possible to take color pictures in the gym.

Shooting a game in color is sensational, of course, but the cost may be prohibitive for many school budgets.

Film Processing: Coaches are lucky in having a growing number of film processing labs which can supply speedy service during the season. If fortuitously located, you can get overnight service.

In sending your film to the processors, it's advisable to include a note on any unusual conditions under which the game was shot. If the game was shot under bad light conditions, give the lab a 25-foot test piece from the end of one of the rolls so that they can compensate to some degree in their developing.

If the film is overexposed, little or nothing can be done about it. If underexposed, the film can be developed at a lower rate than normal to bring out the images.

Equipment Buying

(Continued from page 30)

cussed. These standards must be solidly backed with proven reputation for sound business policies; and that's something which can only be obtained by dealing with reputable salesmen, dealers, and distributors.

How can a coach determine "reputability"? By experience. If the coach doesn't have it, he should seek the advice of others. A reputable dealer will show samples on request, presenting the coach with a variety of items from which to make his selections.

The dealer will service his account. Service to the buyer is an integral part of any manufacturer's product. It assures complete satisfaction with the product the buyer is acquiring.

Price is usually the last thing to consider in equipment selection. Any coach, in order to buy eco-

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SKIN TOUGHENING PREVENTS ATHLETE'S FOOT

Skin specialists say the best way to prevent Athlete's Foot is to increase the skin's resistance to fungus growth*. That's what Onox does. It keeps shoe-softened skin as tough and healthy as your hands.

Onox has been used for many years by clubs, schools, and over 70% of the largest U. S. companies for the treatment and prevention of Athlete's Foot.

*American Pub. Health Assoc., Oct. 15, 1954



new footsprayer CUTS COST 50%

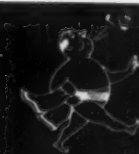
60-DAY TRIAL OFFER

*includes Footsprayer
and solution*

If you are not completely satisfied after 60 days use, you pay nothing . . . just return the sprayer freight collect.

Easy to use.
Bathers step on treadles.
Four jets spray feet.
Sanitary, easy to keep clean.
Uses only half as much solution as the sponge footmat.
Reduces cost to 1/10c per treatment.

Write for FREE brochure with complete information including medical opinions.



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Above installations of 4 Bradley Column Showers—20 bathe simultaneously



Nothing Like a Shower After Exercise or Work



Today facilities for shower baths cost less, require less installation time and less maintenance.

EACH BRADLEY COLUMN PROVIDES FOR 5 SHOWERS

Thousands are bathing daily, in colleges, schools, parks, factories, institutions, at low cost—because each Bradley Shower Column provides 5 Showers yet requires only *one* set of piping connections. The result—80 per cent installation cost decrease.

After work or exercise nothing is as refreshing as a shower . . . and Bradley Columns may be equipped with stall-separating partitions and curtains if greater privacy is desired. A built-in liquid soap dispenser is also offered.

Write today for new Group Shower Bulletin H-1322 to BRADLEY WASHFOUNTAIN CO., 2281 West Michigan Street, Milwaukee 1, Wis.



Large base casting serves as both drain and anchor.



BRADLEY
multi-person showers



Write for Bulletin H-1322

THIS article is reprinted from the superlative booklet, "How to Budget, Select and Order Athletic Equipment," prepared and distributed free of charge by the Athletic Goods Mfrs. Assn., 209 South State St., Chicago 4, Ill.

nomically, must judge all other standards first. Only then can the true value of a product be determined.

Although high price doesn't always mean high quality, this is quite likely to be true in athletic equipment. Generally, the highest priced athletic equipment is the top quality equipment. The difference between a low-priced football shoulder pad and a higher priced one is usually very apparent—where the two are viewed side by side.

However, in most cases, only a careful study of the entire picture in terms of construction, quality, etc., will provide the background for evaluating the price of an article.

It's never wise to sacrifice quality for price. The coach isn't expected to be a manufacturing specialist, but he is expected to spend wisely.

About Your Track

(Continued from page 41)

a winter or heavy rainfall, the surface should be compacted as soon as it's possible to get a vehicle on the track without making deep tire tracks that won't come out after a few days of rolling.

Best compaction results when the track is saturated. This is a hard point to visually determine, but can best be estimated by starting to roll as soon as a vehicle leaves only tread marks on the surface. The pulling force should be a light tractor, pick-up, or jeep. The roller should weigh between 400 and 600 pounds; the best is a three-gang golf course roller. This type roller can also be used on other athletic fields.

Maintenance is another item to consider. A little work every day will keep the surface smooth and firm and in the long run will take less total time than if the track is let go and done only periodically. The track should be run on daily, as it will keep the surface moderately torn up and well mixed; and if the track is brushed and rolled every morning, this will heal it back into a firm surface.

Brushing and rolling should be done the first thing every morning while moisture is still on the surface. The brush should be pulled around the track in the same rotation as the running. The brush should be pulled just fast enough so that the surface doesn't

There is a
Premier Gym Mat
for every
Purse and Purpose.

Premier Athletic Products
River Vale, New Jersey

pile up in front of the brush, but not so fast that the torn areas aren't filled. Next, rolling completes the renewed surface.

The morning dampness will serve to bind the loose material together again. A certain amount of moisture is always needed to insure good compaction. When the surface becomes dry and powdery, it's next to impossible to bind. There's also a danger of having too much moisture in the surface as well as too little. It's always possible to add water but not always possible to remove it.

Calcium chloride has disadvantages as well as advantages. For example, it will hold water in the early spring when actually the problem is to get the excess water out. It will also tend to keep too much moisture on the surface after a rain. Calcium chloride won't as a rule keep enough moisture in the track to preclude any further additions.

There have been comments over the years about tracks being too hard or too soft. It's necessary to have a properly compacted surface that will serve equally well for sprints and distance runs. Surfaces that are best after the winter and in the early spring are too soft in the warmer months that follow. A proper surface will be usable in the early spring as soon as it's rolled, and becomes better until it's again necessary to add moisture to maintain proper compaction.

In summary, a few additional points seem worthy of mention. The Purdue track is 37-feet 4-inches wide. During rains, 6 and even 8 of the nine lanes are usable. The lanes nearest the pole are always the best, as the surface water is moving outward. The track surface doesn't move across the track with the water to any noticeable extent, nor does the wind move it around.

After the curbing is installed, it's wise to keep heavy equipment from crossing over it. It will chip the edges and may even crack it. It's well to put the measurement markers in the curbing at the time of construction.

When the outside curb is higher than the surrounding ground, it may add to the natural drainage of the area. If drainage is needed around the outside curb, the height of the curb above the ground will aid water flow.

The use of cinders always seems to necessitate the presence of a cinder pile. The availability of the shale and clay dictates the necessity of a supply being kept on hand. If available within a reasonable time, a mixture can be processed as needed.

The availability of a ground crew is always a problem, regardless of the size of the institution. The use of all-weather field event surfaces (see my article last January) should provide needed time and labor to keep the track surface in good condition daily.

It has been observed that rolling a track with a roller of excessive weight may damage the surface. If the surface is too hard, it will begin to break down; if it is too soft, it will wave up in front of the roller, causing a lap in the surface.

Planning stadium floodlighting?

Monotube steel floodlighting poles can be shipped from stock in 40', 60', 80' and 100' heights. Other heights are available.



UNION METAL

Monotube Floodlighting Poles

CANTON 5, OHIO

BRAMPTON, ONTARIO, CANADA

COACHES' CORNER



Please send all contributions to this column to Scholastic Coach, Coaches' Corner Dept., 33 West 42 St., New York 36, N. Y.

UNHAPPY with the ref's interpretation of several rules, the Illinois coach, Harry Combes, invited him to stop by his office at the half and read up on the rule book.

"That isn't necessary," replied the ref. "I carry my own with me at all times."

Combes reached for the ref's rule book, thumbed through a few pages, then returned it with the remark, "I just wanted to see if it was printed in Braille."

Having run into a wild crowd that evening, Referee Hagan Anderson picked up his wife and told her it might be better if she stayed away from the games to which he was assigned.

"After all," he said, "it must have been pretty embarrassing to you when everyone around you stood up and booed me."

"It wasn't so bad," she replied. "I also stood up and booed."

Playing with a duffer buddy, Sammy Snead kept driving the ball out of sight. Each time they'd stroll down the fairway and find the balls about 45 yards apart. And each time Sammy would explain, "I guess I hit a rock and bounced."

On the fifth hole, the balls were 60 yards apart. "Who's that?" asked the duffer pointing to the first ball.

"That's me," said Snead. "I guess I hit a rock and bounced."

"What the hell are you doing, Snead?" roared the duffer, flinging his club in the air, "Aiming at those damn rocks?"

Jimmy Demaret had just lost to Ben Hogan by 10 and 9 in the PGA tournament, and a reporter asked him what he considered the turning point in the match.

"It must have been about 10 o'clock this morning," replied Demaret, "when Ben showed up for the match."

Late last summer Power Memorial (New York City) basketball coach Jack Donahue received an unexpected phone call from Junius Kellogg, former Manhattan College hoop star.

"Jack," said Junie, "my kid brother just came to New York from Virginia to live with me. He's 16, he'll be a junior, and plays a little basketball. He's a pretty good student and, oh yes, Jack, he's seven feet tall."

"Jack . . . Jack . . . Jack, why don't you answer me?"

Ohio State's crack frosh five had just finished beating the varsity for the second time last winter when a reporter approached Coach Fred Taylor and asked if it wasn't embarrassing to see his varsity beaten by the freshmen.

"I'll tell you," said Taylor after a pause. "I'd feel a lot worse if they were someone else's freshmen!"

Like the immortal Babe Ruth, that marvel of the gridiron, Bobby Layne, is famous for his disregard for the niceties of training. After coming to the Steelers, he once took a teammate on a tour of the bright lights and kept him out until practically game time. Bobby walked into the dressing room, slipped into uniform, ducked his head under the cold water, and went out and promptly started bedazzling the enemy with his passing and running.

His companion of the evening, however, could barely move. After five minutes on the field, he collapsed. Layne walked over to him, looked down, and clucked his tongue.

"The trouble with you, buddy," he drawled, "is that you're just not in condition."

All through the basketball game, on every single play, the Loyal Rooter had cheered his team to victory. Hoarser and hoarser he grew until finally he whispered to the man beside him. "What d'ya know—I've lost my voice."

"Don't worry," was the tart reply, "you'll find it in my left ear!"

Adolph Rupp tells visitors at Kentucky that the Coliseum is a War Memorial and not a basketball arena. But there was the afternoon his varsity took the floor and found an official running up to them.

"You can't practice here," he said, "Artur Rubinstein is rehearsing for a concert and must have silence."

"Nonsense!" roared the great Wildcat coach. "Rubinstein can play tonight and miss 100 notes and nobody in the audience will know the difference. But let one of my players miss a shot tomorrow night and the whole world will hear about it. We're gonna practice."

The ardent Piston rooter was trying to disparage Bob Cousy. "Sure he can pass," he admitted. "But when he doesn't have the ball, he just stands around."

"Yeah, that's his weakness all right," replied the Celtic booster with a straight face. "He can't score without the ball."

Pin-point penmanship by Bill Roeder, of the N. Y. World-Telegram & Sun, in sizing up the Notre Dame basketball team: "Don't laugh them off on their record. They have one very good boy and of course they're Notre Dame. We hate to bet against them in checkers, let alone something you can use your elbows in."

The coach was a sarcastic buck who chewed out his squad from morn till night, five days a week and all afternoon on Saturday. At the end of the season, the squad was amazed when the captain passed the hat around for donations to buy the coach a present.

But they all chipped in when they saw the gift—a handsomely framed portrait of Lassie inscribed: "With love, from mother."

At a classroom skull session, the coach laid out the plays on the desk, then left the room for a moment before describing them. While he was out, one of the ends placed a basketball play among the diagrams.

When the coach returned, he went over the plays one by one, saying, "This is a fullback counter, this is an end sweep, this is a buck, etc."

Eventually he came to the basketball play. "And this," he said, holding it up, "is a piece of confounded impudence."

The sports columnist who had attacked the local football coach in his paper was embarrassed when he met the coach at a downtown quarterback's luncheon the next afternoon.

"I'm genuinely sorry I wrote that column," the writer apologized. "I guess I'm just a jackass."

"Don't say that," replied the coach. "You're no more of a jackass than I am."

"That," murmured the columnist unable to restrain himself, "is close enough."

THESE TWO REALLY WORK!

Designed especially for basketball players

IF A BRACE WILL HELP—
THIS ONE DOES IT!



HEAVY-DUTY KNEE BRACE
SMALL—MED.—LARGE—EX. LARGE

Both of these braces are inflatable to any desired pressure and are completely adjustable.

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Looking for help for injured ankles? This is the one brace that will really answer your problem.

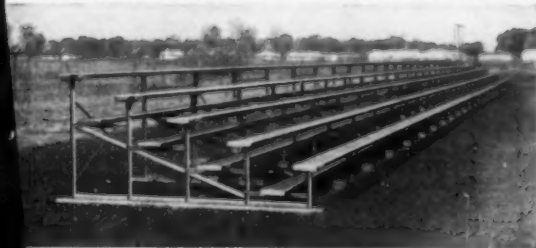


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BOTH SIDES
ADJUSTABLE ANKLE
BRACE
WILL FIT EITHER ANKLE

For these shoe sizes:
7 to 9—small
9 to 11—medium
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Also extra large

Very effective when worn to hasten recovery from sprain or injury.

Versatile Safway 'Budget Master' Steel Bleachers Assemble in 5, 10 or 15 Rows



(ABOVE) 5-row Budget Master steel bleachers located on both sides of football field. (BELOW) Same equipment re-assembled as a single 10-row bleacher. The only additional parts are simple box frames under the top 5 rows, and guard rails.



PORTABLE SECTIONS MOVE WITHOUT
DISASSEMBLY—OUTDOORS OR INSIDE

CROWDS OF ANY SIZE from 20 persons to 10,000 or more can be seated economically on Safway Budget Master portable steel bleachers.

With one basic set of equipment, your own personnel can easily assemble 5, 10 or 15-row sections of any length needed—outdoors or inside. Further, complete sections to 18 ft. long can be re-located without disassembly.

Budget Master bleachers are engineered to provide unobstructed vision, ample leg-room, easy climbing and complete spectator safety. Cross braces tie supporting frames into a unified steel structure that evenly distributes strains and shock loads.

Ask for Recommendations!
Submit details for analysis by Safway seating engineers (no obligation). And write today for FREE BULLETIN 41.



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SYMBOL OF PROTECTION

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Made from the most shock absorbent plastic foam known, and treated with an exclusive plastic coating, POLVONITE pads cushion impact and distribute shock like no other pad. Lighter by far than conventional gear, they fit perfectly, cause no fatigue, yet withstand toughest abuse. Get the facts—and play safe!

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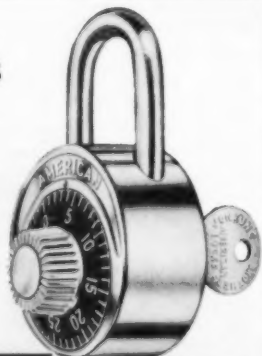
ORIGINATORS OF PLASTIC COATED ALL FOAM MATS AND FIBERLESS SHOULDER PADS

American LOCKS for MODERN SCHOOLS

Many coaches have discovered it pays to equip their lockers with Junkunc-American key-combination padlocks. And here's why! Heavy stainless steel case—attractive blue dial, white numbers and divisions—easy to see—easy to open—self-locking—automatic tumbler disarrangement—special key which cannot be duplicated—free combination charts supplied with each order—two year guarantee.

A highly efficient and serviceable combination padlock priced to fit pared school budgets.

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Model 300K (Key controlled). Model 300 (without Key control) also available.

The worried-looking stranger walked up to the clerk in the general store and ordered all the rotten eggs and overripe tomatoes on the counter.

The clerk grinned, "I bet you're going to the auditorium tonight to hear Coach Jones speak."

"No," the stranger grimaced. "I'm Coach Jones."

Jimmy Demaret scouts the opinion that Ben Hogan is a sulking, uncommunicative opponent on the golf course.

"Ben talks to me on every green," jaunty Jimmy insists. "But he always says the same thing: 'You're away.'"

The famous actress, Arlene Francis, has a 12-year-old son, Peter. One day he was assigned to do a book report and decided to undertake *The Hunchback of Notre Dame*.

"That's pretty tough going," his mother warned him.

"Well, that's what I'd like to read," he said. So she bought him the book.

A few days later he screamed, "Mama, that book is 491 pages long and there's not a word in it about George Izo!"

The old grad, somewhat the worse for wear, reeled into the dressing room after his school's triumph in the Rose Bowl. He staggered up to the coach—one of those goodie-goodies—and grabbed his hand, "Coach," he bellowed, "that was the best damn game you ever coached!"

The blue-nosed coach drew himself up haughtily. "We don't tolerate that kind of language in here," he chided.

"You don't? Gosh, my son never told me that?"

"And who is your son?" asked the coach.

"Why, your quarterback," replied the old grad.

The coach beamed: "The hell he is!"

Chris Schenkel, the football announcer, appears to be a sweetheart of a chap. But, alas, he refuses to learn anything about the game. We still haven't recovered from the boo-boo he made in his broadcast of the Syracuse-Penn State game.

With Penn State trailing 12-20, Roger Kochman raced 100 yards for a touchdown, making the score 18-20. That's when our boy Chris floored us with this marvelous piece of technical thinking:

"Folks, that makes the score 18 to 20. With 4 minutes and 18 seconds remaining in the game, what do you do: Try for 2 points or go for 1?"

This is an expert?

So we switched on the rich vibrato of Mel Allen telecasting the Air Force-Missouri game. The Air Force had just completed a pass play on which an Air Force man clipped, Mr. How-About-That promptly announced, "That clipping penalty nullifies the play."

Aside to Messrs. Schenkel and Allen:

If you're not doing anything some Saturday afternoon during the football season, switch on the Game-of-the-Week on NBC and listen to an announcer who really knows the game and the rules—Lindsey Nelson.

Elton Hunsinger, hoop coach at Ashland (Pa.) High, is mighty proud of the record compiled by his club last year. Playing a gruelling 24-game schedule, his Black Diamonds went 23 games, 31 minutes, and 52 seconds without losing a man on personal fouls! In short, if they'd have been able to go just 8 seconds longer, they'd have established the unprecedented record of going through an entire season without losing a man on fouls.

"This is truly a defensive tribute in this day and age of racehorse basketball," avers Mr. Clean (Coach Hunsinger), "particularly when you remember that our opponents fouled out at least one man in 20 of our 24 games."

Football Floodlighting

(Continued from page 42)

go directly to the purchase and installation of trouble-free lighting instead of transformers, panels, and related items."

Taking another look at the amazing lighting improvement accomplished on half the football field by the addition of just two Wide-Lites per pole convinced the school board. They had visual proof.

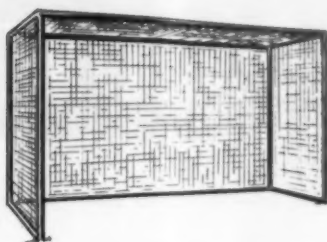
The board elected to replace two of the existing incandescent units on each tower with two High Output Wide-Lites. This provided an average lighting increase of 100% this year.

As funds become available, additional Wide-Lites will be installed until an eventual increase of 400% is achieved. The entire program can be completed without changes in transformers, panels, or wiring, and the existing towers will be utilized.

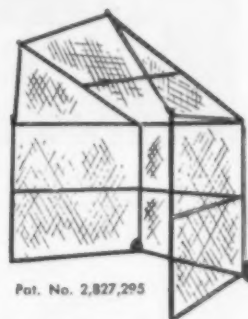
A unique community relations plan to improve the lighting on a football field also was explained:

"Wherever and whenever school leaders announce their plans for improved lighting to the community, you'll often find that the Football Mothers, the Boosters Club, the Quarterback Club, and others will underwrite a couple of units and thus keep part of the expenditure out of the school budget."

After the demonstration in New Brighton, the school board and McNitt knew that they had discovered the most economical and efficient method of bringing their lighting system up to date.



FIELD HOCKEY GOAL. All welded construction makes this goal extremely rigid. Tubular frame is heavily galvanized. Goal can be ground set or mounted on wheels.



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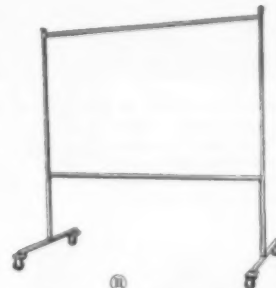
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ALUMINUM GYM VOLLEYBALL STAND.

Regulation height for volleyball, badminton and tennis. All-aluminum with cast base fitted into two non-removable screw hooks, assuring non-slip rigid standards.



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All-welded construction. Main frame is of 1½" galvanized pipe, upper and lower bars 3". Rack stands 6' high by 6' in length. Distance between upper and lower bars is 4'. Unit rolls on heavy rubber composition casters.

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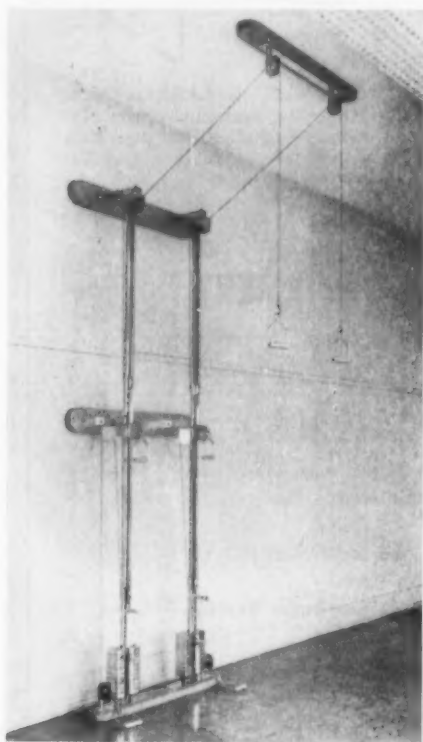
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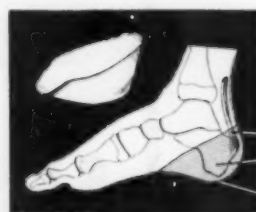
See our exhibits at N. Y. St. AHPER conv. Jan. 23-26, Buffalo, N. Y.
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NEW EQUIPMENT

For full details on any of these products, check the listings under "NEW EQUIPMENT" in the Master Coupon on page 80.



• **PULLEY MACHINE.** Terrific exerciser for entire body. Automatic weight selectors eliminate all manual weight changers. Also features six separate handles, ball-bearing pulleys, steel aircraft cable, and 50 lbs. of weight for each side. (Marcy Gymnasium Equip. Co.)



ACHILLES TENDON
CALCANEUS TIP
SOFT TISSUES
(HEEL PAD)

• **HEEL PROTECTOR.** M-F lightweight, plastic cup eliminates heel injuries. Only one size required, shapes to every heel. Unbreakable, removable, comfortably thin, it weighs under a half ounce and covers the maximum area around heel.



• **ANGLE FLITE STARTING BLOCKS** are adjustable for 30 to 80° to fit individual sprinter. Built of aluminum channels, foot pressure anchors block quickly and firmly, cannot slip. Blocks fold compactly for easier carrying. (Aluminum Athletic Equip.)



• **BASEBALL SHOE.** Spalding's go-go speed shoe is a low-cut shoe made of yellow-back Kangaroo leather with ankle tie-straps for snug fit. Features two-piece steel toe plates and one-piece heel plate. Long-wearing, flexible, and water resistant.



• **HOME WHIRLPOOL BATH.** Easily portable with all electrical and major driving mechanisms outside of tub and water, Aqua-Spa is constructed of wear-resistant Formica with heavy-duty motor and switch as well as fully insulated, safety-tested circuitry throughout. Can be used in ordinary bathtubs at home or away.



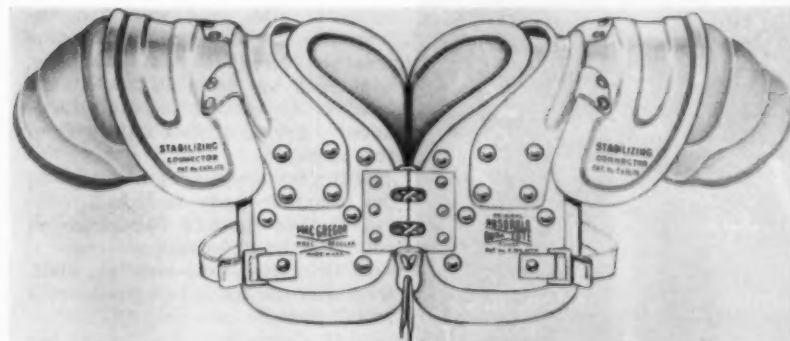
• **MOLDED RUBBER BLOCKING DUMMIES** with replaceable covers come in midget or regular size. Cover zips on and off, and plastic handles suspended on webbing permits holder to easily release dummy. Molded core gives years of service. Ideal for blocking and tackling drills. (Bob Canning, Inc.)



• **ANTI-HEMO-PAK** contains an ankle cold pack that laces and straps on to lessen pain and swelling; a hinged cold pack for curved areas; and a square cold pack for any flat injured area. Chemical pack stays cold for three days. Refreeze it and it's ready for instant use. Constructed from tough, durable plastic. Kit permits trainer to quickly elevate injured part, apply pressure, and then apply ice pack—recommended procedure in most cases of strains and sprains.



• **GYM CHARGER.** Roe Crowther's revolutionary practice device enables the football coach to incorporate all of his practice drills indoors. Built of solid steel and easily attachable to any gym wall, it's fitted with Enduro Pads made of tough, resilient Polyurethane foam and folds flat against the wall when not in use. It trains players to deliver an explosive blow from a sound stance with perfect balance and to tackle with authority and form. Practically any field drill used on the famous Crowther 2-Man Machine can now be performed on the Gym Charger in your off-season gym program. Built to last for many years.



• **TRACK SHOE.** Riddell's Snug Lift protects, supports, and makes foot obey every surge of speed. Made of no-stretch vinyl designed to cradle the arch for sure, snug fit, preventing slipping and shifting of shoe in foot.

• **SHOULDER PADS.** Plastrum, a brand-new plastic material, replaces fiber in Absorbio and oil-fiber shoulder pads. Boasts greater flexibility, durability, shock resistancy, and fit, and is completely waterproof. Remains smooth always. (MacGregor)



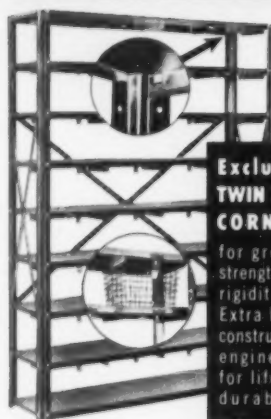
• **PORTABLE BAT-RAK,** fabricated of lightweight steel and aluminum, is designed to accommodate 24 bats. Each player has his own labeled slot, while unique Flash-Fold feature and sturdy handle insure instant portability and multiple use. (Program Aids)



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Extra Heavy Duty Gym Basket Rack

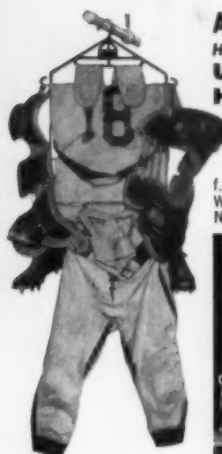
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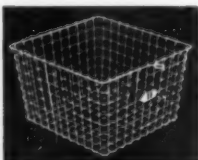
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PARK, PICNIC, PLAYGROUND, SWIMMING
POOL AND DRESSING ROOM EQUIPMENT

"Here Below"

(Continued from page 5)

if it doesn't materialize, set up the play; move the ball around and look for a chance to feed the pivot; drive hard, but clear out if you don't get the pass; if your man gives you room, pop the ball up; etc.

Our boys scotched their patterns with a hounding, leeching defense that prevented the Russians from setting up. They hit the boards hard and never permitted the aggressive Russians to take the initiative from them. In the final analysis, they had too many guns for the Russians. (Wouldn't it be nice if this were also true on the military front?)

But the Russians are obviously getting there. They've advanced at least 50 basketball years since 1953. Just think, less than a decade ago they couldn't shoot from outside and didn't even know what a jump shot was. They played a purely mechanical game, with the principal emphasis on wild, bulldozing driving.

Today they handle themselves in the most approved American fashion. All they lack is the finesse and savoir faire that comes with years and years of experience, from backyard on through high school and college.

It's nice to report that despite the bruising nature of the action everyone displayed a wonderful brand of sportsmanship. Gifts were exchanged before the game, the players kept helping each other to their feet after spills, no one argued with an official, and everyone shook hands after the final whistle. This wasn't a studied thing; it was all genuine and spontaneous.

We were particularly impressed by the Russians' comportment toward the officials. Never did they raise a voice, an eyebrow, or a finger at a decision. On every foul, debatable or otherwise, they promptly shot an arm into the air and walked briskly to their next position.

The game was played under international rules, and we liked the way they worked out. First, the lane was six feet wider at the base, branching out from 12 feet at the head to 18 feet at the end line—keeping the pivot men farther from the basket.

Other interesting departures from our amateur code included:

1. A time limit of 30 seconds on continual ball possession.
2. Only two time-outs per half, with only the coach being permitted to call them.
3. If a man is fouled in the act

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of shooting and the shot is good, no free throw is awarded—precluding any three-point plays.

4. On a back-court foul, the foul is charged against the offender but the ball is awarded to the other team out of bounds.

We're all for more of these people-to-people sport contests. It's nice to see the athletes of other countries close up, to get to know them, and have them get to know us.

But, alas, it isn't the athletes who foment international crises and disasters. If sports are to serve as instruments of peace, it may not be a bad idea to put the politicos into uniform—they need the education more than the athletes.

WHILE preparing our sermon on the evils of recruiting last month, who should pop into our office but Wayne Duke, the personable young assistant to the director of the NCAA.

Poor Wayne. A minute after releasing his hand and strapping him to a chair, we were enfiling him with a stream of poison darts. Did the NCAA really think it could wipe out recruiting abuses? Was it really aware of all the chicanery going on? Wasn't its system of encouraging one school to inform on another basically unwholesome?

The Duke of Kansas City dealt with us most patiently. Of course the NCAA has a pretty good idea of what's going on—both over and under the table. And maybe its system of dealing with it isn't perfect, but it is working. Wouldn't we agree that recruiting today is far more salubrious than it ever was?

Mr. Duke then shifted over to meet our "home-run ball"—that all the codes in the world cannot eradicate recruiting excesses without a "cop" on every campus to enforce them.

"Why," he gently admonished, "we DO have a cop on every campus—the athletic director. We expect him to enforce our rules, and we feel he's doing a fine job. The great majority of our A. D.'s are facing up to the problem and helping to restore sanity, order, and ethics to their recruitment programs.

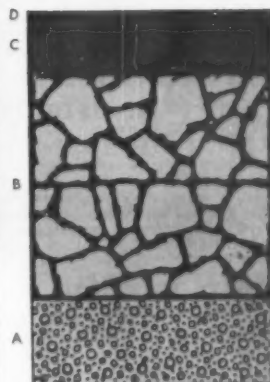
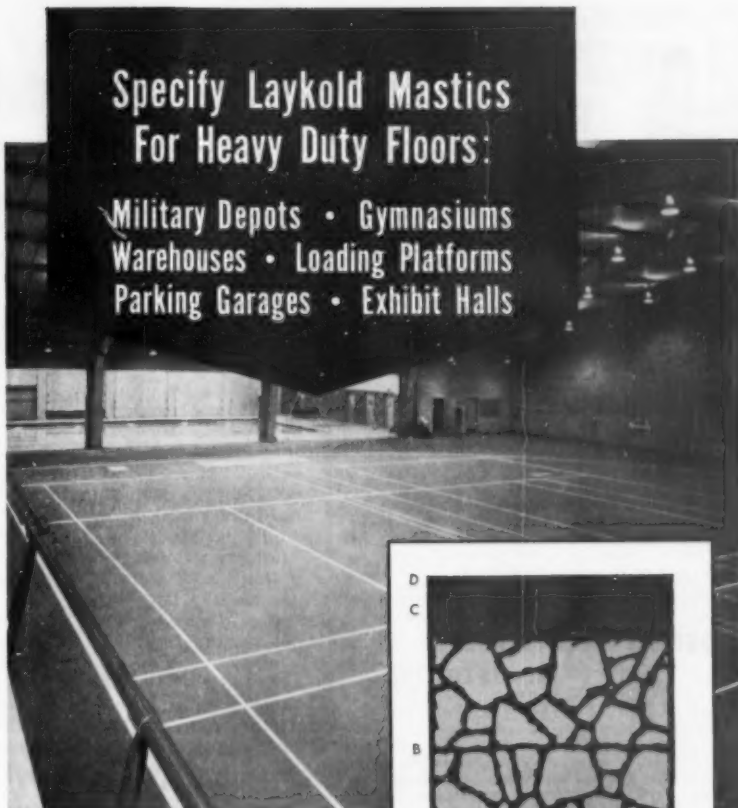
"Just be patient. Everything takes time. And we feel we're making progress. Just look back and see how far we've advanced in recent years."

You know how most arguments end. No one ever goes away totally convinced. But, consciously or not, the other fellow's argument always leaves some sort of impression.

We felt a lot better after our vis-a-vis with the NCAA representative. The policing of the college sports beat is in good hands, indeed.

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Cross-section View of a Typical
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- A—2" sub-base of compacted crushed gravel.
- B—5" of Bitumuls Penetration Macadam placed in two lifts.
- C—2" of Laykold Mastic placed as 1 1/2" leveling course; 1/2" surface course.
- D—Wearcoat Finish; Colorcoat Seal (choice of colors: red, green, black).

Heavy Duty Floor Mastics are made of Laykold Floor Mastic Binder, cement, sand, and stone chips. These are easily mixed and screeded into place; hard-troweled to a dense, smooth surface; and cured to a hard, durable finish.

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- No dust or spalling normally associated with concrete
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- Easy to maintain and repair

For on-grade construction Laykold Mastic Floors are often "built from the ground up". One recent example: the Field House floor specified and built for the Waukesha, Wisconsin, High School, shown above.

This floor, Bitumuls Penetration Macadam construction, has a Laykold Mastic surface, Wear-

coat finish, and a "two-tone" Colorcoat seal (in green and red). They use it for a full program of athletics; plus auto, stock, and home shows.

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ETHAN ALLEN and TYLER MICOLEAU. Fast-reading guide shows by word and picture how to coach all the baseball fundamentals more effectively. 150 action drawings detail the playing of each position—give tips on batting, base running, bunting; directing the running squeeze play, the hit and run, the delayed double steal, etc. \$2.95

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ETHAN ALLEN. The fielding, batting, and base running techniques of Mantle, Williams, Mays, Musial, over 100 major-league stars—pictured and explained in graphic action photos. Book covers defensive and offensive fundamentals; diagrams tactical situations with designated player movements. Rev. Ed. 716 illus. \$2.95

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New Books on the Sport Shelf

- **WINNING BASKETBALL STRATEGY.** By Glenn Wilkes. Pp. 203. Illustrated—diagrams. Englewood Cliffs, N. J.: Prentice-Hall, Inc. \$4.95.

ANY number of books have been written on basketball, but this is the first, as far as we know, to concentrate on the vital aspect of strategy.

Incorporating the thinking of some of the best coaches in the land, the author, a highly successful coach at Stetson U., tells exactly how to plan the entire season, from pre-game strategy right through the tip-off to the final buzzer.

Section 1 expounds pre-game strategy—offensive preparation, defensive preparation, and before-each-game strategy.

Section 2 covers strategy from the start of the game to the buzzer—routine game strategy, and substitutions, time-out, and half-time strategy.

Section 3 explains the strategy for special situations—strategic offensive situations, zone defense attack strategy, strategic defensive situations, and special last-minute strategy.

An excellent supplement on charting and scouting strategy winds up the text.

All these areas are broken down into detail and explored thoroughly. Coaches on all levels will find this an excellent source with which to supplement their planning and thinking.

- **SPORTS INJURIES.** Edited by Thomas B. Quigley, M.D. Pp. 202. Illustrated. New York: The American Journal of Surgery, Inc. \$5.

THIS 10½ by 8 inch soft-covered volume presents 26 of the finest articles published in a special issue of *The American Journal of Surgery* last year. Written by some of the country's foremost surgeons and experts in the field, the book covers an awesome range of subjects, shedding brilliant light on the vital aspects of sports injuries.

The valuable book is organized into three main sections:

"General Considerations" offers superb treatises on the frequency and nature of sports injuries; organized medicine and athletics; physical fitness for sports; an understanding of the athlete; the place of the trainer; athletics and nutrition; evaluation and treatment of muscle function in injury; protective football equipment; engineering research on protective headgear; and experimental investigations of ligamentous healing.

"Specific Injuries" presents superlative articles on initial management of head and neck injuries; injuries to the eyes; facial injuries; mechanics of common shoulder injuries; injuries to the

shoulder region; treatment of dislocations of the acromioclavicular joint; injuries to the elbow, forearm, wrist, and hand; abdomen and thorax injuries; pelvis, hip, and thigh injuries; injuries to the genitourinary tract; knee injuries; and ankle fractures and ligament injuries.

The final section, "Injuries Characteristic of Particular Sports," covers baseball elbow and shoulder lesions; ski injuries; boxing injuries; and safety factors in skin diving.

All the material is beautifully written, comprehensively covered, and nicely illustrated. Every coach, trainer, and administrator will find this book exceedingly valuable.

- **HOW TO IMPROVE YOUR FENCING.** Pp. 60. Illustrated. Published and distributed by The Athletic Institute, Chicago. 50¢.

NO. 20 in The Athletic Institute's superlative series of instructional booklets, *How to Improve Your Fencing* offers a simple, complete, step-by-step treatise on the sport, covering an introduction to foil fencing, elementary offense, elementary defense, strategy and tactics, a glossary of terms, and a suggested bibliography.

With Maxwell R. Garret, Illinois fencing coach, serving as consultant, the book presents a stunning photographic treatment of practically all the skills, reproduced from a color slide film, *Beginning Fencing*.

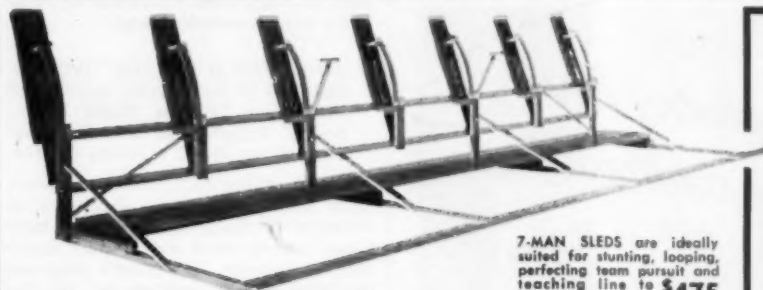
This book and the film (a four unit, 35-mm. affair, available in either sound or silent versions) are ideal for anyone interested in introducing or implementing a fencing program.

- **GYMNASTICS: PROGRESSIVE PRACTICES AND MODERN COACHING.** By Peter Rodwell. Pp. 184. New York: Emerson Books, Inc. \$4.95.

THE product of years of research by an outstanding English authority, this book offers a systematic series of recommendations aimed at a balanced development of the muscular and nervous systems, as well as at physiological efficiency.

The author accomplishes this through a series of progressive practices that are enjoyable and self-contained; that anticipate faults and give opportunities for correction; that develop confidence; and that train to a high degree of control and good performance.

The progressive practices (agilities, heaves, and vaults) comprise the major portion of the text. Other valuable materials cover the art of coaching gymnastics, the body in movement, achievement cards, 75 gymnastic stunts



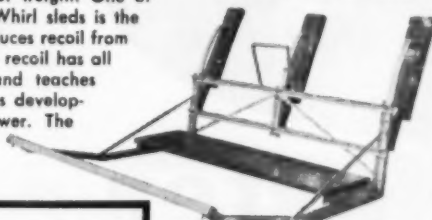
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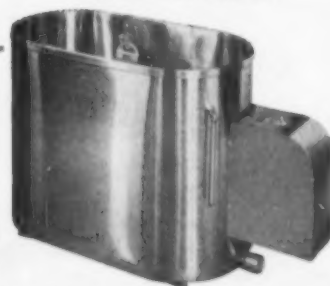


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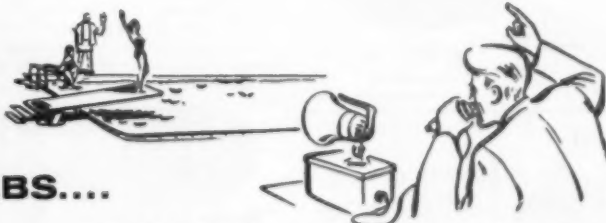
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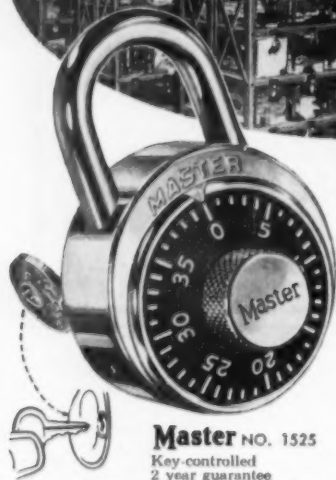
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| Calf machine | |

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- **INSTRUCTIONAL COURSE LECTURES FOR 1959 of The American Academy of Orthopaedic Surgeons.** Edited by Dr. Fred C. Reynolds. Pp. 335. Illustrated. St. Louis, Mo.: The C. V. Mosby Co. \$16.

THE annual Instructional Course Program of The American Academy of Orthopaedic Surgeons constitutes perhaps the country's outstanding seminar on injuries. This year's program consisted of 124 courses by 181 instructors, and was attended by 1,700 physicians. Significantly it presented for the first time a separate symposium on athletic injuries.

Compounded into this handsome 11 by 8½ inch volume, printed on heavy gloss paper, are 30 of the outstanding courses given by outstanding physician-authorities.

Part 1 presents the symposium on athletic injuries, and covers five superb lectures—prevention of athletic injuries, injuries to the knees, diagnosis and treatment of ankle injuries, rehabilitation of athletes, and comments by Dr. Don H. O'Donoghue, famous Oklahoma City physician.

Part 2 offers three lectures on the hand; Part 3, four lectures on the foot; Part 4, two lectures on the knee; Part 5, three lectures on the spine; Part 6, lectures on unequal extremities, osteomyelitis, and electromyography in orthopaedic surgery; and Part 7, nine lectures on fractures.

Superbly written, this volume represents absolutely the last word on the management of all the aforementioned conditions. It can be recommended without quibble or qualm to all coaches, trainers, and physicians.

- **THE ENCYCLOPEDIA OF FOOTBALL (Revised).** By Roger Treat. Pp. 525. Illustrated. New York: A. S. Barnes and Co. \$5.95.

THIS new edition of the official encyclopedia of pro football brings the history, records, and statistics of the game up-to-date through the 1958 season. A wonderfully absorbing "bible," it details the record of every player, every coach, every game, and offers many other interesting and vital points of information on pro football.

This massive compilation contains a new listing by teams of every player who's performed in the pro league since 1921, as well as a photographic gallery of all-time stars.

Marvelously comprehensive, *The Encyclopedia* contains the answers to every question on pro football you can possibly ask—and it makes fascinating reading in season and out.

- **TACKLE SOCCER THIS WAY.** By Duncan Edwards. Pp. 112. Illustrated. New Rochelle, N. Y.: SportShelf, P. O. Box 634. \$3.25.

FULL of sound advice for the young player and coach, this book was completed by one of England's great players shortly before he went down

in the crash that snuffed out the lives of the famous Manchester United team.

Relatives of the player decided that the book should be published as a permanent record of his great faith in and love for the game of soccer.

Miscellaneous

• **Recreation Leadership (2nd Edition).** By H. Dan Corbin. Pp. 463. Illustrated. Englewood Cliffs, N. J.: Prentice-Hall, Inc. \$6.50. (This excellent text on the techniques and program material of every type of recreational activity for all ages has been thoroughly brought up to date, incorporating the most recently approved national conference recommendations on recreation and play therapy.)

• **Pressing Defense and Fast Break Basketball.** By Jim Baggot. Pp. 36. Illustrated—diagrams. Greeley, Colo.: Paul Maloney. \$3. (A brief presentation of the system that has produced three Colorado Class AAA high school champions in the past four years.)

• **Athletic Directors National Conference.** Pp. 32. Washington 6, D. C.: American Assn. for Health, Physical Education and Recreation. 75¢. (Report of the first Working Conference on general athletic administration, financial control and procedures, facilities and equipment, staff relations, public relations, and management of athletic events.)

• **Spectator Control at Interscholastic Basketball Games.** By Glenn C. Leach. Pp. 31. New Rochelle, N. Y.: Sport-Shelf. \$1. (An excellent contribution to the administration of high school basketball games.)

• **Table Tennis, a New Approach.** By Ken Stanley. Pp. 108. Illustrated. \$3.25. (Complete instruction by a British authority. Order from Sport-Shelf, P. O. Box 634, New Rochelle, N. Y.)

• **Records and Champions.** Pp. 96. Illustrated. \$2. (While predominantly British, this book is loaded with all sorts or records. Order from Sport-Shelf, P. O. Box 634, New Rochelle, N. Y.)

• **1959-60 Official National Basketball Assn. Guide.** Edited by Bill Mokray. St. Louis: The Sporting News. \$1. (A positively scintillating compendium of records, rosters, schedules, statistics, etc. on pro basketball, replete with pictures and complete all-time player records.)

• **Soccer Coaching Charts (20" by 30"), \$2.** (A set of six well-illustrated charts on basic techniques—two sheets on ball-control, and singles on kicking, heading, dribbling, and goal-tending. Comes in two colors, figures are large and clear, captions are clear and concise. Order from SportShelf, Box 634, New Rochelle, N. Y.)



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Multiple-Sport Fieldhouse

(Continued from page 10)

to the architect. The main conclusion was that we should build a fieldhouse instead of a gymnasium.

This suggestion was approved by the Board for submission to the architectural firm of Ebling, Plunkett and Keymar of Milwaukee, who developed the plan in cooperation with the staff, Board of Education, and community.

That is the story behind the new Waukesha physical education plant. Consisting of a fieldhouse 130' by 240', a swimming pool 36' by 75', a balcony gymnasium 47' by 100', and the necessary locker and shower rooms, it embodies five teaching stations with a music room used as a classroom for the sixth station.

The fieldhouse has a wooden floor 82' by 89.6', with the remainder of the surface being of asphalt mastic composition. The main basketball court runs across one end adjacent to the balcony. On the main floor on this side is a 15-row bleacher which extends up into a 12-row reverse-fold bleacher in the balcony. This bleacher forms the wall between the balcony and fieldhouse when not in use.

Together with roll-away bleachers 10 rows high on the other side of the court, they give us a seating capacity of 2,500. Whenever these bleachers are moved to the end and higher bleachers used on the side, the seating capacity can be increased to 3,500 for basketball. The basketball area also features two cross-courts over the main varsity floor.

When the balcony bleachers, which fold forward, are recessed, they give us another physical education station 47' by 100'. This area has an asphalt tile floor and its own heating and ventilating units. It features six badminton courts, a volleyball court, and a basketball court.

Additional facilities include: two doubles and one singles tennis courts, two volleyball courts, a track having 10 laps to the mile, broad-jump pit (covered in the off-season), and a straightaway for a 65-yard dash with sufficient room to stop safely.

While the track isn't banked, the curves are designed so that a boy can take them at full speed. Pits for the high jump and pole vault are built above the floor.

The indoor track extends around the perimeter of the main building, some 20 feet from each of the walls with the basketball and tennis

courts in the "infield." The plans emphasized the necessity of a resilient, durable, dust-free "seamless" surface for the running track and tennis courts.

After evaluating the requirements, the architects recommended a Laykold mastic floor. They pointed out the advantages inherent in the smooth, resilient surface and emphasized that proper formulation of the mastic mix and proper construction would minimize the effect of the anticipated heavy point loading created by bleacher movement. Wherever possible, this point loading was avoided by placing steel channels under bleacher wheels.

After the mastic mix was laid down, a Laykold wearcoat was squeegeed on in contrasting colors—the running track being finished in red and the infield in green. Finally a colorcoat seal was applied in the appropriate colors to each of the resilient surfaced areas. When finished, the only line of demarcation between the two areas was the difference in colors. No seam or visible break was apparent in the surface.

The indoor-outdoor swimming pool is located adjacent to the fieldhouse. Made of steel with ceramic tile running to the scum gutter, it has radiant heating in the floor to maintain comfort at all times and to dry the deck more rapidly.

It also has its own copper duct ventilating system and a built-in P. A. system with a microphone outlet at the observation window. The pool is 12' deep at the deep end and comes equipped with both a one-meter and a three-meter board.

Three 27' overhead doors open into the fieldhouse so that the roll-away bleachers from the basketball

EQUIPMENT SUPPLIERS

Folding Doors—Barber-Coleman
Gym Flooring—Shannon Flooring
Basketball Banks—Fred Medart
P. A. System—Continental Sound
Ventilated Lockers—All-Steel
Training Room Equipment—Milwaukee Sporting Goods
Gym Lighting—Boggis-Johnson, Westinghouse Electric
Folding Bleachers—Berlin-Chapman, Fred Medart
Showers—Crane and Powers
Electric Scoreboards—Fair Play

court can be rolled into the opening for swimming meets. These hold 570 spectators. But by placing bleachers on one end and the other side, we can increase the seating capacity to 900.

Since most of the spectators are actually seated in the large fieldhouse area outside the pool proper, they're more comfortable than they would be in the hot, humid pool.

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As previously mentioned, the new plant possesses five teaching stations—one in the pool, one in the balcony, and three in the fieldhouse. Both boys and girls classes use the three fieldhouse stations at the same time. After-school use by both boys and girls is also effected without conflict or problem.

We find that the plant is working most successfully and is improving our physical education instruction to a marked degree.



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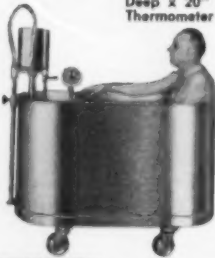
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The Best Turf

(Continued from page 46)

bluegrass, by contrast, prefers higher mowing, but then this is normal to an athletic field anyway. Other varieties include Arboretum, Cascade, Delta, Newport, Park, Troy, etc.

One of the advantages of natural bluegrass is that the seed comes from unpampered sods, some of which have existed since colonial times. A wide assortment of slightly varying types—natural varieties, if you will—are included. Where a strain of rigid heredity might fall to a single affliction, a mixed population is less likely to.

Oregon quality fescues further enlarge a seeding mixture's potentialities, especially for poorer or sandy soils. Fine fescue varieties include Chewings, Illahee, Rainier, and Pennlawn, in addition to the parent creeping red. The fine fescues have a somewhat larger seed than Kentucky bluegrass, and provide good initial coverage; yet they're not so repressive of slower grasses, as would be nurse grasses (ryegrass, redtop).

For northern athletic fields, mixtures based upon Kentucky bluegrass are suggested, with some fine fescue, and in tough locations where coarseness is less a concern than durability, tall fescue (Kentucky 31, Alta), too.

For the Middle Latitudes. In the Mississippi valley as far north as St. Louis, and in the lower Ohio valley, summers are especially difficult for bluegrass unless it's given consideration in autumn rather than summer. In such regions, there's good reason to think of tall fescue first in the athletic field mixture, seconded by the bluegrasses and red fescues.

Or a "southern approach" is possible, whereby hardy bermudagrasses are utilized for fields receiving predominately summer play. Bermuda can be overseeded with winter grasses in autumn. Or winter grass can even be alternated with annual bermuda sown each spring. One prominent stadium not used in winter allowed crabgrass to dominate in summer, with autumn overseeding to assure green turf the following spring.

For the South. Over most of the South, bermudagrass best fills the athletic field need. Most economical is common bermuda, available as seed. Common bermuda can be very attractive if provided ample fertility, watering, and frequent mowing.

Named selections of bermuda must be vegetatively planted, since they don't come true from seed. One hesitates to suggest specific varieties, since many are excellent, some available locally. Tiflawn is widely used in the Southeast (viz. L.S.U., Florida State, Georgia, and Auburn stadia), where it has proven vigorous and recuperative.

In the upper South and southern California, U-3 has been vigorous and hardy, as have Sunturf and Tifgreen. In Texas, Texturf varieties have done well, as has Ormond in Florida.

Even better selections may be in the offing. Kansas, Alabama, Oklahoma, and California researchers have hundreds of fine selections under test, and Tifton, Georgia has another about ready for release. Your state experiment station can recommend varieties available through local turfgrass nurseries.

An alternative to bermudagrass in the deeper South, available as seed, is Bahia grass. Bahia is often mixed with tall fescue. It's a low, stoloniferous species, somewhat open and coarse.

For the West. Not a great deal can be done for arid fields, unless irrigation is possible. Under limited rainfall, buffalograss may prove satisfactory for summer use, as might some of the crested wheatgrass farther North. But neither of these is a really tight turf.

On the other hand, with irrigation, maintenance is less troublesome in arid climates than in the humid East, for the same grasses used in the East. Where watering is possible, bluegrass should give excellent service in the more northerly plains, and bermudas should provide excellent service south of Albuquerque-Wichita.

ESTABLISHING AND KEEPING ATHLETIC FIELD GRASSES

Soil and Seedbed. We can only touch upon the athletic field foundation, but certainly the soil should be the best obtainable. This doesn't necessarily mean hauling in topsoil. But it does mean phosphatic fertilizer mixed to

the depth of the root zone (phosphorous is fixed by the soil, leaches down from the top only slowly), tillage to loosen soil compaction, and incorporation of organic additions (compost, peat, or other humus) if needed. About 5% organic content makes sandy soils more retentive, clay soils looser.

Small amounts of sand mixed into heavy soils is relatively useless, since the sand will simply bind in the clay as does aggregate in concrete. It's better to utilize funds for fertilizer (which will promote grass roots, thereby contributing organic material) or for organics directly.

In regions of acid soils, where a soil test shows low pH, agricultural lime should be mixed into the seedbed, at rates of about 100 pounds to the 1000 square foot.

Original construction should provide good drainage. On low lying fields, tile might be needed. In most cases crowning the field a foot or two so that surface drainage is gradual away from the center, will be sufficient to prevent waterlogging.

Any new seeding should be mulched. Loose straw a few straws deep will suffice. Mulch holds humidity about the seed, hastening sprouting, at the same time that it protects soil against wash. Obviously the time of seeding should match the kind of grass, autumn being best for northern locations, spring for southern.

Watering. Seldom is rainfall adequate to foster quickest sprouting and

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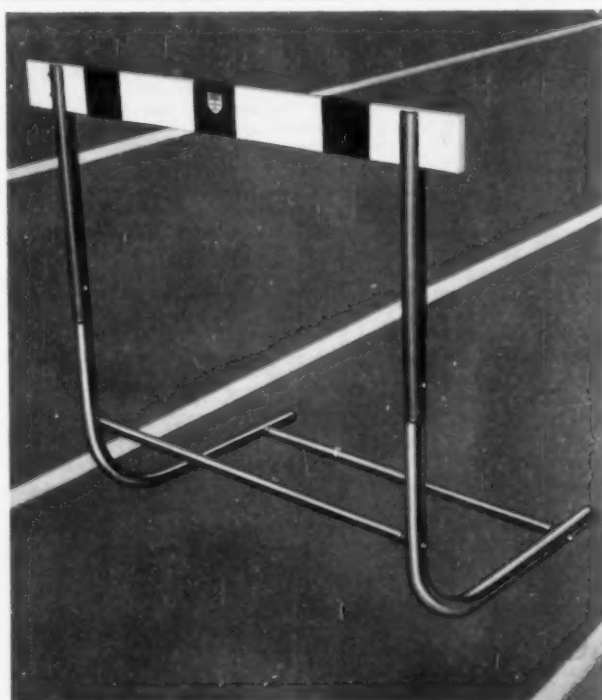
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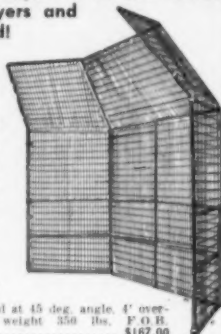
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most rapid establishment of the seedlings. Thus, frequent but light watering is good regimen on new seedlings. As the grass roots grow deeper, frequency of watering can be lessened.

Sandy soils hold less water and drain faster than heavier ones; they should be watered more frequently. Likewise sands lose their fertility more quickly, and should be fertilized frequently at light rates. Clays normally require slow but prolonged irrigation, hold both water and fertility over a longer period of time.

There's difference of opinion on need for watering athletic fields once the turf is established. In its first year, grass will be incapable of enduring much drought, and should be watered any time wilting starts. But once the turf is fully established, good grass can endure protracted drought.

Fields not in play during summer very likely can survive drought-induced dormancy without harm. But rain or watering must commence a few weeks ahead of the season for play. Both bluegrass and fescue in the North, and bermuda and bahia in the South, are quite drought tolerant.

Persistent irrigation may waterlog the deeper soil, causing shallow rooting. Moreover, continuously wet soil, subjected to athletic field use, may compact and become impervious. And persistent watering encourages unwanted shallow rooted species (bentgrass, annual bluegrass, Poa trivialis, to say nothing of weeds like crabgrass). One of the simplest procedures for eliminating these grass invaders is to weed them out by not watering.

Mowing. Close mowing on an athletic field is seldom needed. Even on lawns it's a mistaken belief that close mowing contributes to attractiveness. The evenness of the cut, not the height, governs appearance.

Southern bermuda grass accepts close mowing more gracefully than northern bluegrass, since it's stoloniferous. Clipping bermuda at 1 inch presents no problem. But athletic fields in the North should be mowed two inches tall, or even three inches in the more southerly portion of the bluegrass zone.

Greater leafage enhances energy reserves, results in deeper rooting, and the denser foliage lessens weed invasion.

Weeding and Pest Control. Almost miraculous elimination of most broad-leaf weeds is possible through the 2,4-D family of chemicals. A mixture of 2,4-D with 2,4,5-TP (Silvex) takes care of most, including clover. Very light rates suffice, around 2 pounds active ingredient per acre. Since formulations differ, follow exactly the instructions accompanying any product used.

Grass weeds are more difficult. Since their coarseness is less a problem on athletic fields than lawns, mostly they can be left to be outgrown by better grasses. If crabgrass and goosegrass are a special problem, these annuals can be killed with arsonate materials (DSMA, AMA). These, as well as some of the pernicious knotweeds and



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spurges (hard to kill with 2,4-D), show up chiefly where soils have become hard and compact.

Spiking or aeration of the compacted spots, along with generous fertilizations at appropriate season, may help hold the turfgrass. Some athletic grounds are routinely aerified (the punching of holes with powered equipment). This should be necessary only on compacted soils of poor structure.

Fertilization. The time at which fertilizer is applied can have great influence. For bluegrass turfs, the main season for feeding would be autumn. This builds strength into the turf at a favored season and carries over into the following year. Fertilizer applied after the soil has cooled will be held, even though there's no very obvious grass response that late.

In the more northerly reaches of the bluegrass zone, fertilization is appropriate the year round. In middle latitudes, however, be careful about "soft" grass in hot weather, the result of a little too much nitrogen. Soft grass risks dying at the same time that summer weeds are encouraged by the extra fertility.

In the South, the reverse holds. Bermudagrass flourishes during summer, needs ample fertility from spring until autumn. Fertilization can taper off as cooler weather begins, both to prevent lush growth that may lack winter hardiness, and to withhold fertilizer from the winter weeds that frequently become prominent in dormant turf. Where winter grass overseedings are made, autumn-winter fertilization is called for, of course.

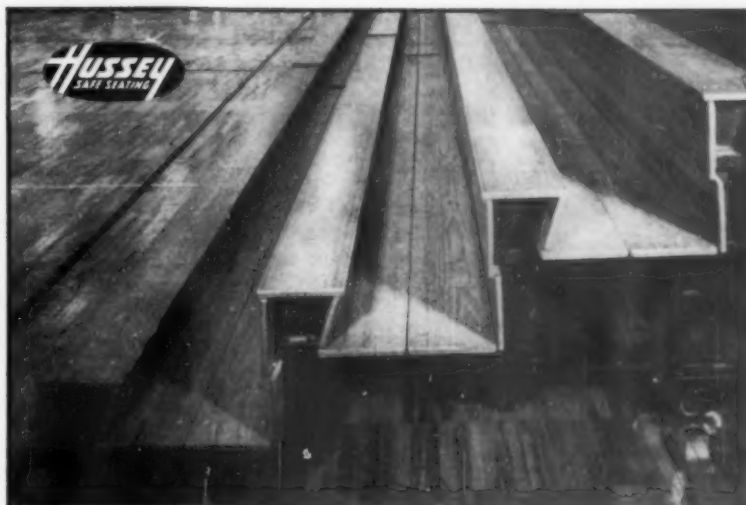
Total fertilizer needs during a year vary with the climate, soil, and grass. Three pounds of actual nitrogen (that is, 30 pounds of a fertilizer containing 10% nitrogen, such as a 10-6-4) is about minimum; and for heavy feeders (as bermuda varieties) in favorable climates as much as 6 or 8 pounds is suggested.

Fertilizer for turf should be high in nitrogen (the first figure of the analysis), this exceeding the phosphorus and potassium (the second and third figures) at least twice over. Where you know there's sufficient phosphorus and potassium in the soil, straight nitrogen—such as the ureaforms, urea, ammonium nitrate—can be used from time to time in place of complete fertilizer.

Overseeding. The seasonal sowing of temporary grasses has been mentioned. It's also good insurance to bolster seed with the permanent grasses periodically, so that potential new plants are ever ready to fill voids.

A pound or two of bluegrass or bermuda mixtures per 1000 sq. ft., each autumn in the North, each spring in the South, can be scattered and let "grind in" under normal play on the field.

Occasional Considerations. Disease or insect damage isn't usually serious on good turfgrass mown high. Sometimes soil grubs or sod webworms decimate sizable patches. Chlordane, dieldrin, heptachlor, and diazinon are then recommended, and may persist for years in the soil.



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Four Gyms in One

(Continued from page 14)

to completely dry out athletic clothing.

A large storage room off the gym corridor serves as a receiving room for new and cleaned equipment. One section is reserved for new material, with each sport having a separate cage for its cleaned equipment.

The 12 ft. x 45 ft. space not occupied by the storage cages serves as a team room for lectures, black-board talks, and the showing of films. This space can also be used for body-building activities such as weightlifting and wrestling.

The accompanying picture shows these cages and part of the team room space. Note the large door at the end which permits the reception of large parcels.

The boys and girls physical education rooms are located on the second floor overlooking the end gymnasium. The lockers in these rooms are ventilated as shown in the pictures. Gang showers in these rooms are controlled by an attendant who also handles the towel room. There are also four hand-operated showers for individual use in each dressing room.

Each of these rooms contains an instructor's station equipped with large windows so that the instructor can supervise both the locker room and the gymnasium area.

In addition to the regular dressing rooms for indoor sports and gym classes, another room for football, track, baseball, and other outdoor sports is available in the building housing the heating plant. This building is located 150 ft. away from the main building. An exit door leads directly to the practice field.

The training room including a whirlpool, hydrochlorator, heat lamps, and other physical therapy is located next to the coaches' room. Housed in the same building is the laundry which provides for the cleaning of equipment. It includes four units—washer, washer and spin dryer, dryer, and mangle. Access to this building is provided by means of a covered passageway. The rifle range is located off this passageway.

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specially designed cafeteria which seats 700. This can be divided into two areas, each with its own stage. Plays may be practiced here without interfering with the main auditorium. The entire area may be cleared for school parties and dances. A special snack-bar is available for these affairs. This space saves wear and tear on gymnasium floors.

When this entire plant is completed, we shall have all the needed facilities necessary for a well-rounded physical fitness and recreation program. It will stand as a monument to those who spent countless hours planning the project and to the taxpayers who paid for it.

Two-Level Plant

(Continued from page 8)

of folding bleachers along with the permanent ones, 3,000 people can be seated.

The lower level contains the playing floor, three locker rooms, the health and drivers' training classroom, student entrances and exits to the playing fields, storage areas, offices, etc.

Separate locker rooms and storage facilities are available for the varsity teams and physical education classes. The main locker room has approximately 90 lockers for use by each class during its scheduled period, for hanging street clothes. The basket room contains enough baskets to permit one to be assigned to each student for storage of physical education clothing.

Equipment storage is divided according to its use as inside or outside. Inside materials are located for easy access to the playing floor, and outside things for availability to the playing fields. All clothing is stored near the locker rooms.

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on one side, and by the pep and equipment room on the other. The latter room is furnished with folding chairs, a desk and blackboard, as well as a large storage wall for storing varsity uniforms.

Two offices, a laundry room, and a coach's dressing room are also located on the lower level.

The budget for the building was \$300,000, thus requiring an economical structural system. The use of two intersecting steel arches provided a very satisfactory solution, since they could be supported at four points outside the building and required no expensive load bearing walls.

The walls throughout are constructed with concrete masonry units and brick. All interior brick was left exposed and sealed with a clear liquid wax. Most windows are glazed with either flat or corrugated glass-fiber reinforced plastic. Insulated honeycomb plastic panels are used for the window areas in the public and students' foyers.

The playing floor is hard maple over treated sleepers on a concrete sub-floor. Floors in the classroom, foyers and bleacher aisles are asphalt tile. Floors in the locker rooms are quarry tile.

Lighting in classrooms consists of fluorescent fixtures providing 35 footcandles of lighting. All other lighting is incandescent. Lighting in the gymnasium is provided by use of high bay, prismatic lens units with 3,000-hour incandescent lamps to reduce maintenance expense.

These latter fixtures provide approximately 65 footcandle lighting level for athletic events. Fixtures are switched to provide even lighting distribution at lower levels for public meetings and other uses in the gymnasium.

Heating and forced ventilation are provided throughout the building. The gymnasium area is heated and ventilated by two air handling units and one exhaust fan, providing complete modulation of temperature and ventilation. Locker room areas are heated and ventilated with unit ventilators and exhaust fans, providing a minimum of six air changes per hour.

All controls are completely modulating. Classrooms and other areas are heated with finned tube radiation. Finned tube radiation and heating coils in unit ventilators and air handling units are supplied with hot water from an oil-fired generator.

The cost of the actual building was \$301,740; for an area of 25,750 square feet, the per square foot cost was about \$12. The total volume of the building is 603,075 cu. ft.

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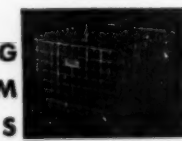
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Weight Training

(Continued from page 26)

Correct form was stressed constantly for both routines. The names of the muscle groups involved in each exercise were identified so that the boys would better understand the necessity of using good form.

The above routines took from one hour to one hour and 15 minutes to complete. This included the rest periods. Careful observation of the group was made on the first set of exercises, and any necessary adjustment in weight was made.

No description of the actual weight training exercises is necessary as these are the standard exercises described in any of the text books on weight training.

STRETCHING EXERCISES

After the weight-training routine was completed, a 10-minute break was given to the group. Following this break, the group participated in stretching exercises, though time wasn't always available to complete these exercises.

To break the monotony of exercising, we occasionally used the last 15 minutes of the period for recreational games, which in themselves involved exercises of the same nature.

The following stretching exercises were used: windmill, shoulder pinch, bridge, frog knees, leg raise, squat and leg extension, bear crawl, duck walk, and rope skipping.

It should be noted here that rope skipping was the most popular of all the exercises. Many times the boys would use the 10-minute break to participate in added rope skipping.

Although a total of 50 boys were enrolled in the classes, the number actually tested varied because of drop-outs and absences on the testing days. Since all final testing was done on the last two days of school, no subsequent testing was possible.

The actual time devoted to weight training was five weeks. This left one week for testing, orientation, and other interruptions.

Pull-Up Results. 34 boys improved their pull-up score, seven remained the same, and four had lower scores. This means that 76% of the group improved, 15% remained the same, and 9% retrogressed.

Of the 34 boys who improved, the average improvement was 2.3 pull-ups, which represented an average increase of 32%.

Push-Up Results. 40 boys improved their push-up scores, four remained the same, and one had a lower score. This indicates that 89% of the group improved their score, 9% remained the same, and 1% retrogressed.

Of the 40 boys who improved, the average improvement was 10.1 push-ups. This represented an average increase of 51%.

50-Yard Dash Results. 23 boys im-

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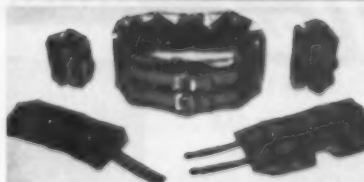
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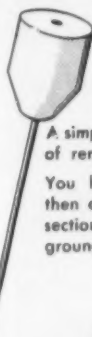
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proved their time, while 10 remained static and 12 showed poorer times.

Of those who improved their time, the average improvement was two tenths of a second. Of the group who retrogressed, the average loss in time was .175 seconds.

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Parts	Heavy	Medium	Light
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Thigh	.856	.463	.172
Calf	.047	.208	.000

Girth Measurement Results. The results of the girth measurements may be seen in the accompanying table. Also listed is the body type of the trainee so that a more thorough evaluation of the results can be made.

The *heavy* individual was one who was overweight and had poor muscle tone. The *medium* built person was one who had good muscle definition, about average weight for his size and age, and good muscle tone. The *light* body type was one who was underweight and had poor muscle tone.

There were eight boys in the heavy classification, 30 boys in the medium classification, and eight boys in the light classification.

The table shows the average improvement in inches of all the boys in the various groups.

CONCLUSIONS AND RECOMMENDATIONS

The group studied was a heterogeneous one, affording a good sampling of the total male population at this particular school.

The results of this study may not be valid because of the small number of boys tested. This is especially true of the deviates from the medium body type of boy.

The technique of assigning the beginning weights seemed suitable as very little adjustment in weights was necessary once the classwork began.

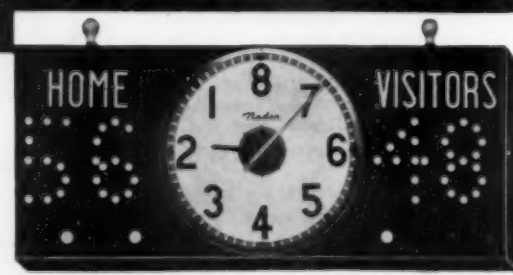
Heavier weights could possibly have been assigned for the lower body and legs as most boys were able to handle an increase of five pounds a week very easily.

Correct form in exercises had to be stressed constantly as the boys had a habit of using other muscles to help in the work. Identifying the muscle groups and explaining how the exercises helped to develop these muscles seemed to help curb this tendency.

Because of the great popularity of rope skipping, this activity would seem to be a suitable addition to the regular physical education classes.

The results of the pull-up test indicate that apparently some strength improvement was developed in 76% of the group. The reason for the lack

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of improvement in the remaining 24% was not investigated.

The marked improvement in the push-up scores seems to indicate that endurance as well as strength was improved. The reason for this conclusion is that when the tests and re-tests were performed, the amount of time allowed between the pull-up test and the push-up test was approximately eight minutes. The difference between the number of pull-ups and push-ups performed during the re-test period was considerably higher than during the pre-training testing time.

It may be concluded that the results of the 50-yard dash may not be valid because of the many variables involved in this test. Great care was taken to try to establish identical conditions for the test and re-test, but this was difficult to do. The results may indicate, however, that junior high school boys can improve their time in the 50-yard dash through weight training.

The decrease in the waist measurement of those boys in the heavy classification was an obviously desirable result.

Some of the improvement in girth measurements must be attributed to normal growth and development.

The improvement in the girth measurements of the subjects compared favorably with other reports made by Murray and Karpovich, and Massey, Freeman, Manson, and Wessel.

The improvement of girth size in the upper body and arms of boys in the light body classification was very satisfactory. If heavier weights had been used for the lower body, perhaps the improvement in the girth measurements of the legs would have been greater.

An important result of this program was the change in attitude of some of the group. There were some who displayed more confidence in themselves and "came out of their shells," so to speak. This was definitely a desirable result.

The over-all results of the weight-training program in this study was satisfactory to the instructor. It was recommended that such a program be included in the regular physical education classes.

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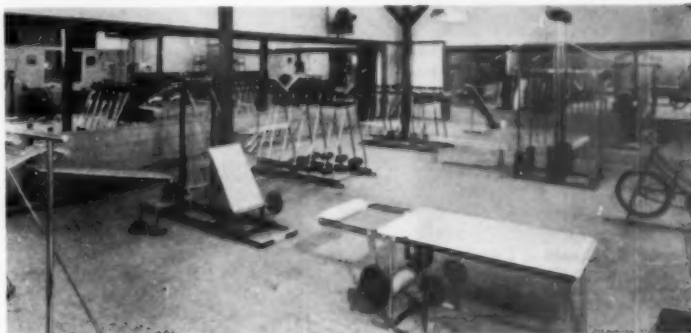
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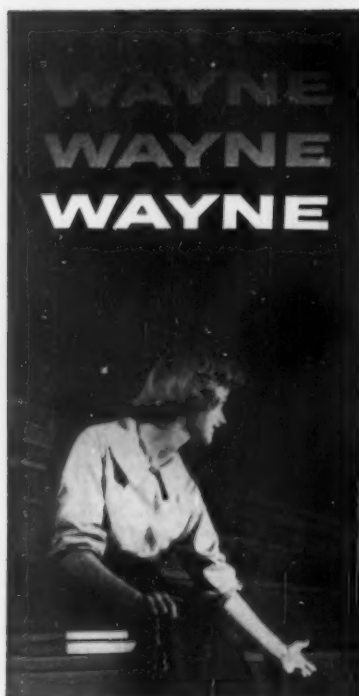
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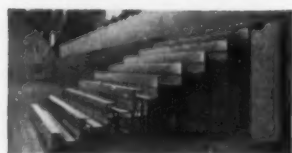


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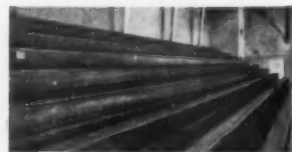
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| 21 | 22 | 23 | 24 | 25(a) | 25(b) | 26 | 27 | 28 | 29 | | |
| 30 | 31(a) | 31(b) | 32(a) | 32(b) | 32(c) | 32(d) | 33 | | | | |
| 34 | 35 | 36(a) | 36(b) | 36(c) | 37 | 38 | 39 | 40 | 41(a) | | |
| 41(b) | 41(c) | 41(d) | 42(a) | 42(b) | 42(c) | 43(a) | 43(b) | | | | |
| 44 | 45(a) | 45(b) | 46 | 47 | 48 | 49 | 50(a) | 50(b) | 51 | | |
| 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 | 61 | 62(a) | |
| 62(b) | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 |
| 74 | 75 | 76 | 77 | 78(a) | 78(b) | 79 | 80 | 81 | 82 | 83 | |

NEW EQUIPMENT INFORMATION

- | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|----|----|
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